DEC 21 1925

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Vol. XIV, No. 12 DECEMBER, 1925

JOURNAL
OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION

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AMBROSE HUNSBERGER, LOCAL SECRETARY,
1600 Spruce St., Philadelphia.

The 1926 Meetings of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also be held in Philadelphia, same time and place.

For Association Roster, see pages x, xii and xiv.

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EDWARD HENRY KRAUS, PH.D.

ANN ARBOR, MICH.

President of the American Association of Colleges of Pharmacy,
1925–1926

EDWARD H. KRAUS.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XIV DECEMBER, 1925 No. 12

EDWARD HENRY KRAUS.

A quarter of a century ago when the American Conference of Pharmaceutical Faculties was organized in historic Richmond, Virginia, the presidency was bestowed upon a Michigan dean. Last August when this same organization entered upon an era of greater usefulness to pharmacy under the new and more appropriate title "American Association of Colleges of Pharmacy," Michigan was again honored through the selection of Dean Edward H. Kraus of the College of Pharmacy of the University, as President of the newly-named organization. His untiring efforts in behalf of pharmacy and his superior executive ability have won for him the esteem and good will of all who have had the pleasure of working with him since his advent into the active affairs of the ASSOCIATION less than half a decade ago.

Edward H. Kraus was born in Syracuse, New York, December 1, 1875. Following his graduation from the Syracuse High School he entered Syracuse University, from which he was graduated in 1896 with the degree of Bachelor of Science and in 1897 with the degree of Master of Science. His early tendencies toward pharmacy are evidenced by the fact that while he was yet a student in High School he obtained employment in one of the pharmacies of his native city, where for two years he devoted considerable time to the study of pharmacy in order that he might gain a better knowledge of the subject and thus serve his employer to greater advantage. In the fall of 1899 he went abroad for further graduate study at the University of Munich, Germany, where he received the degree of Doctor of Philosophy in 1901.

Immediately following graduation from Syracuse University with the Bachelor's degree in 1896 he was appointed instructor in his Alma Mater and acted in that capacity for three years. Upon his return from Europe in 1901 he again served on the staff of Syracuse University, this time as an Associate Professor. In 1902 he was selected to fill the position of Head of the Department of Science of the Syracuse High School. In 1904, when the University of Michigan was in search of a mineralogist, Dr. A. B. Prescott, then Dean of the College of Pharmacy, was commissioned by President James B. Angell to interview Dr. Kraus in regard to

the position. As the result of this interview, Dr. Kraus came to Michigan as Assistant Professor of Mineralogy in the fall of 1904. In 1906 he became Junior Professor of Mineralogy and Petrography and in 1908 was advanced to the rank of Professor of Crystallography and Mineralogy and Director of the Mineralogical Laboratory. From 1908 to 1910 Dr. Kraus served as Secretary of the Summer Session of the University. In 1911 he became Acting Dean and in 1915 Dean of the Summer Session.

In 1920 it became necessary to select a man of outstanding characteristics and keen executive ability to take charge of the College of Pharmacy of the University. Dr. Kraus was chosen for the positon and served as Acting Dean until 1923 when he was prevailed upon by his associates on the campus and his host of friends among the pharmacists of the state to accept the deanship of the College. Few are the men who could carry on with such great success a program so varied in character; Head of the department of Mineralogy in the University where many problems involving the highest type of research work are constantly under investigation, Dean of the Summer Session, an organization as large as the University itself but a few years ago, and Dean of the College of Pharmacy.

Among the scientific and honorary societies to which Dean Kraus has been chosen as a fellow or member are the American Association for the Advancement of Science, Geological Society of America, Mineralogical Society of America (President, 1920), American Chemical Society, Optical Society of America, Michigan Academy of Science (President, 1920), American Institute of Mining and Metallurgical Engineers, AMERICAN PHARMACEUTICAL ASSOCIATION, American Association of Colleges of Pharmacy of which he has been a member of the Executive Committee since 1923, American Association of University Professors, Phi Kappa Psi, Phi Beta Kappa, Sigma Xi, Phi Kappa Phi, Phi Delta Kappa, and Rho Chi. Dr. Kraus is also an active member of the Masonic Fraternity, and of the Methodist Church of Ann Arbor.

As an author his publications are numerous. A list of his published articles and textbooks in the scientific press of this and foreign countries would be too long to be included in this brief sketch of his life work. In recognition of his achievements in science his Alma Mater, Syracuse University, in 1920, conferred upon him the honorary degree of Sc.D.

Dr. Kraus married Miss Lena Margaret Hoffman of Syracuse, New York, in 1902. They have two children, Margaret and John, both of whom live with their parents in Ann Arbor.

That the destinies of the American Association of Colleges of Pharmacy for the current year are to be directed by one fully qualified, there need be no further comment. His high ideals for pharmacy coupled with his ability to judge conditions in pharmaceutical education, bespeak for the ASSOCIATION a most successful year under his administration.

C. H. S.

EDITORIAL

E. G. EBERLE, EDITOR 253 Bourse Bldg., PHILADELPHIA

RETROSPECT AND PROSPECT.

THE early records of the year that is passing showed pledged funds for the AMERICAN PHARMACEUTICAL ASSOCIATION Headquarters of about $250,000, of which the cash in hand amounted, in round numbers, to $100,000. Conservative estimates were made that these sums could be doubled by the close of another year, and these fore-thoughts are nearly in accord with the present condition of the Headquarters' Fund. Whatever the viewpoint may be relative to the success of the campaign, comparatively few pharmacists expected that the high mark set as the goal would be reached, but the hope of the few encouraged the many, and consummation of things hoped for is near. There is another thought in connection with the building and that is a provision which is considered by every organization in connection with its home; namely, its maintenance. Therein may be a Christmas thought for some—a contribution to an endowment fund which is of secondary importance only to the building and equipment. Much preliminary work is necessary and this will begin with the activities of the "full-time" Secretary after January 1.

There is now a more general agreement with the statement that pharmacists are engaged in an undertaking truly national in its representation, scope and influence—one that has attracted and is attracting public attention and will do more to favorably establish Pharmacy in the public estimation than any effort of constant and growing value; that this has for its purposes the strengthening of every division of Pharmacy and the safeguarding and improvement of the Public Health in which it has a very important responsibility.

The Commonwealth Study of Pharmacy has, doubtless, been of great benefit to the public and pharmacists; there has been a strengthening of confidence which has a value that cannot well be determined. The writer met a well-known bookman within the last few weeks on the cars; never before had he laid particular stress on the importance of pharmacy, but this time his first remark was in substance that he had placed pharmacy on a higher plane in his own estimation and the pharmacists' estimate of themselves had largely contributed to his enlightenment. Both "Pharmacy Week" and the Commonwealth Study of Pharmacy have been subjects of editorial comment in recent issues of the JOURNAL, and much of the work may be credited to the year now coming to a close.

On the first day of the New Year the U. S. Pharmacopœia X becomes the official standard. It has received merited recognition in these pages and attention should again be called to the "Notes on the Pharmacopœia," printed in the November JOURNAL. The work on the National Formulary V will be brought to conclusion on the birthday of 1926, and as soon as possible thereafter, giving all pharmacists due time for preparation, this edition will become official. To all of those who labored for many months on these revisions the thanks of pharmacists are due; the public should be made acquainted with the importance of them so they may realize, in a measure, their obligations to the revisers and value the safeguard provided for them by these standards.

The deep interest of the members of all associations of the drug trade is bringing pharmacists into greater service; the significance of this endeavor is enhanced by coöperative interest—all organizations have problems of their own and they have others which require their combined thought and united efforts wherein the AMERICAN PHARMACEUTICAL ASSOCIATION, as a medium in this service, will be of greatest importance to all organizations representative of the drug industries and pharmacy in general.

Pharmacy is progressing—let it be embodied in the New Year's Wish that the impulses of pharmacists may be strengthened by an abiding faith in their profession which enables them to displace memories of disappointments by a morale signifying belief in one another and a determination to shape the present opportunities of pharmacy into realizations.

E. G. E.

THE CENTENARY OF THE AMERICAN JOURNAL OF PHARMACY.

THE Editor of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION was invited to join the contributors to the centenary number (December 1925) of the *American Journal of Pharmacy*. There are two reasons for reprinting this message—to acquaint the members with the response and because the event marks a centenary period in the annals of pharmacy during which the AMERICAN PHARMACEUTICAL ASSOCIATION had its beginning, achieved much and laid the foundation for greater service.

ONE HUNDRED YEARS OF PHARMACEUTICAL RESEARCH.

In seeking for words with which to express a tribute to the *American Journal of Pharmacy* on its one-hundredth anniversary we may, figuratively, apply the lines of Bancroft—"Each generation gathers together the imperishable children of the past, and increases them by new sons of light, alike radiant with immortality." Certain it is that the *American Journal of Pharmacy* has been and is a shining light that shineth more and more unto a perfect development of pharmacy—it has been as a lamp to pharmacy and as a light to pharmacists.

The honored veteran publication has an unbroken record of one hundred years, it is the oldest pharmaceutical journal published in the English language, and it may be questioned whether it does not hold seniority among all publications devoted exclusively to pharmacy and continuously under the same direction. It is worth while to determine the standing, as the question is occasionally asked, "What pharmaceutical periodical holds first place in point of seniority?" No American publication devoted to chemistry has to its credit as many years of service; the same is true of dentistry, and while the linking of medical publications to its predecessors may establish priority, there is, as far as the writer knows, no American medical journal that has not in its history what may be considered a break in its chain of years.

It is fitting for the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION to offer its congratulations and good wishes to the *American Journal of Pharmacy*, not only because of appreciation of the coöperation and service, but because it issued the call for the preliminary meetings for the organization of the AMERICAN

PHARMACEUTICAL ASSOCIATION and printed the reports thereof. The first editor, Daniel B. Smith, became the first President of the ASSOCIATION, and in its editorial lineage are men who gave life-long service to the organization. Among those who have passed onward are such distinguished pharmacists as William Procter, Jr., John M. Maisch, Henry Trimble, and Henry Kraemer. For a number of years the minutes of the annual conventions of the AMERICAN PHARMACEUTICAL ASSOCIATION were published in the volumes of the centenary celebrant.

Much of that which was spoken and written during the centennial celebration of the Philadelphia College of Pharmacy & Science applies as well to the publication through which that institution has rendered most valuable services to American pharmacy. The history of the earlier years in the development of the United States, commercially, educationally, and professionally and the progress of pharmacy in its many activities, are both germane subjects at this time. There is nothing that contributes greater interest, strength and loyalty in a worthy activity than an acquaintance with its history. In that connection we might say much more, but others will write or have written, for, as has been stated, whatever is said of the College, which directs the usefulness of its *Journal*, will apply as well in many respects to the latter, and on that subject much research has been recorded and a number of addresses and reports have been made in commemoration of a century of pharmaceutical service—an era that has witnessed many changes of great significance for pharmacy—a period of time that has contributed so largely to its history that a most interesting volume of more than 700 pages touches only the high points of progress.

All honor to those whose labor and energies in behalf of the *American Journal of Pharmacy* always have been directed for the elevation of pharmacy and extending its domain of usefulness, and coördinating its services with those in related professions so that original investigations may be productive of greatest good and best results.

E. G. E.

SECOND INTERNATIONAL CONFERENCE ON THE UNIFICATION OF FORMULÆ OF HEROIC REMEDIES HELD IN BRUSSELS, BELGIUM, SEPTEMBER 21–29, 1925.

FINAL PROTOCOL AND DRAFT OF THE INTERNATIONAL AGREEMENT.

The Second International Conference on the Unification of Formulæ of Heroic Remedies was held in Brussels, Belgium, September 21st to 29th.

The representatives of the countries which participated in the Conference are named in the Final Protocol which follows this report.[1]

The Conference, the first session of which was held at 10:00 A.M. on Monday, September 21st, was opened by an address by Baron Rolin-Jaequemyns, Minister of the Interior and Hygiene, who, on behalf of the Belgian Government, extended a most cordial welcome to the delegates. On concluding his address, he proposed that the election of officers be proceeded with. Accordingly, Prof. E. Hairs, President of the Committee on Organization, was unanimously elected President. The latter then took the chair and made appointments as follows: Prof. E. Poulsson,

[1] We are indebted to Dr. A. G. DuMez for this report.

delegate from Norway, and Prof. L. Van Itallie, delegate from Holland, were appointed Vice-Presidents. Dr. De Myttenaere, Chief Inspector of Pharmacies of Belgium, was appointed Secretary and Mr. J. Carpentier, Assistant Director of the Ministry of the Interior and Hygiene of Belgium, Assistant Secretary. Dr. J. Vintilesco, delegate from Roumania, and Messrs. J. Bartholomé, L. Michiels and N. Wattiez of Belgium were designated Assistants to the Secretariat. The remainder of the session was devoted to the adoption of rules governing the work of the Conference and to the appointment of committees to consider and report on Topics I, II, IV, V, VI and IX, respectively, of the program, an outline of which follows:

Topic I	Revision of the decisions of the first Conference.
Topic II	Unification of the formulas of other heroic remedies.
Topic III	Unification of arsenic and bismuth compounds.
Topic IV	Unification of chemical methods of assay of certain medicaments.
Topic V	Unification of biologic methods of assay.
Topic VI	Unification of maximum doses.
Topic VII	Examination of the proposition to adopt a characteristic container for remedies intended for external use.
Topic VIII	Regulation of international commerce in narcotics.
Topic IX	Examination of the project to create a permanent international secretariat of pharmacopœias.

It was unanimously agreed that Topic no. VIII should be stricken from the program as the subject was already being dealt with by a special committee of the League of Nations.

Subsequent plenary sessions were held on September 22, 23, 25, 26 and 29. At these sessions, there were considered, in addition to Topics III, VII and IX and the reports of the committees, several special propositions, namely: (1) A proposition to adopt a chemical method of standardization of the arsenicals submitted by Dr. De Myttenaere of Belgium. (2) A proposition to adopt extracts of unit strength to be used in the preparation of other galenicals submitted by the Swiss delegation. (3) A proposition to study the methods of dealkalinizing glass containers intended for eye lotions and hypodermic solutions submitted by the Swiss delegation. (4) A proposition to compile alphabetically in a small volume all of the decisions on drugs and medicaments made by the Conference submitted by the Swiss delegation.

The decisions reached by the Conference are embodied in the draft of agreements, which follows.

FINAL PROTOCOL.

The undersigned,[1] Delegates of Germany, Argentine, Austria, Belgium, Bulgaria, Cuba, Denmark, Egypt, Spain, United States of America, Finland, France, Great Britain, Greece, Hungary, Italy, Japan, Lettonia, Norway, Holland, Poland,

[1] The following delegates were also registered but were not present at the last session or did not sign the protocol: Australia, Dr. C. L. Park; Belgium, Prof. M. Ide; Bulgaria, Mr. Andre Kolar; Colombia, Dr. de Mesa; France, Prof. Em. Perrot; Great Britain, Mr. R. D. Hutchinson; Hungary, Count Woracziczki; Ireland, Mr. Patrick Brook-Kelly; Luxemburg (Grand Duchy), Dr. Razen, Mr. Jos. Schommer; Peru, Dr. Carlos F. Frumdick; Sweden, Mr. Felix Peyron; Union of South Africa, Dr. J. A. Mitchell; League of Nations, Dr. Raymond Gauthier.

Roumania, Kingdom of the Serbs, Croates and Slovenes, Sweden, Switzerland and Turkey, met at Brussels on September 21 to 29, 1925, for the purpose of revising "The International Agreement Respecting the Unification of Formulæ of Heroic Medicaments" signed at Brussels November 29, 1906, and to study matters in general pertaining to the unification of the divers pharmacopœias.

At the end of their deliberations, which are recorded in the minutes of the sessions, a draft of the decisions reached was prepared, a copy of which is annexed hereto, and it was agreed that this draft should be recommended to the respective Governments for approval as soon as possible.

Done at Brussels, September 29, 1925.

For Germany—Signed: Dr. Schellhorn.
For Argentine—Signed: Alberto Zwanck.
For Austria—Signed: G. Brigode.
For Belgium—Signed: Eug. Hairs, Dr. Ferd. DeMyttenaere, Dr. A. Schamelhout, Dr. Jean Bartholomé, N. Wattiez, Edgard Zunz, L. Michiels.
For Bulgaria—Signed: Dr. K.-M. Sarafow.
For Cuba—Signed: Luis A. Baralt.
For Denmark—Signed: E. Host Madsen.
For Egypt—Signed: Reginald St.-A. Heathcote, I.-R. Fahmy.
For Spain—Signed: Enrique Soler.
For the United States of America—Signed: Andrew G. DuMez.
For Finland—Signed: Robert Ehrstrom.
For France—Signed: Dr. L. Grimbert, M. Tiffeneau.
For Great Britain—Signed: Sir Nestor Tirard, Edmond White, G.-F. McCleary.
For Greece—Signed: Prof. Dr. Emmanuel.
For Hungary—Signed: Cornel Torok.
For Italy—Signed: Pietro Biginelli.
For Japan—Signed: T. Nozoe, S. Takazawa.
For Lettonia—Signed: J. Maizit.
For Norway—Signed: E. Poulsson.
For Holland—Signed: L. Van Itallie, J.-S. Meulenhoff.
For Poland—Signed: R. Debicki.
For Roumania—Signed: J. Vintilesco, D.-M. Jonesco, Dr. Grigoresco-V. Elvir.
For the Kingdom of the Serbs, Croates and Slovenes—Signed: A. Holste, Ph.-M. Vladislav St. Andjelkovitch.
For Sweden—Signed: O. von Friedrichs.
For Switzerland—Signed: R. Eder, H. Golaz.
For Turkey—Signed: D. Ibrahim Edhem.

FINAL DRAFT OF THE INTERNATIONAL AGREEMENT RESPECTING THE UNIFICATION OF THE FORMULÆ OF HEROIC MEDICAMENTS.

Resolutions.

A. Revision of the Convention of 1906.

General.

ARTICLE I. Certain requirements of the Convention of 1906, such as those concerning the degree of fineness of powdered vegetable drugs and the time of harvesting, have been discontinued where methods of assay permit the exact determination of the active principles of the drugs or their preparations and where the active-principle content has been fixed.

ARTICLE II. Tinctures may be prepared by maceration or percolation or in certain cases by solution of a standardized official extract.

ARTICLE III. The tinctures of heroic drugs for which the content of active principles has not been fixed shall be prepared from 10 per cent of the drug by weight.

ARTICLE IV. The tinctures of heroic drugs for which the content of active principles has

been prescribed shall if necessary be brought to the required strength by the addition of alcohol of the proper strength.

ARTICLE V. The fluidextracts of heroic drugs for which the content of active principles has not been prescribed shall be prepared in such a manner that one part by weight of the fluidextract will represent one part by weight of the drug.

ARTICLE VI. The fluidextracts of heroic drugs for which the content of active principles has been fixed shall when necessary be diluted to the required strength.

ARTICLE VII. A heroic medicament shall not be given the form of a medicinal wine.

Special.

ARTICLE VIII. The medicaments listed in the following table shall be designated in the respective pharmacopœias published by each of the contracting governments preferably by the Latin titles given in the table and shall conform to the standards prescribed therein.

NAME OF THE MEDICAMENT.	STANDARDS.
Aconitum Napellus L.	
Aconiti tuber	The dried tubercule.
Pulvis Aconiti	The powder shall contain 0.50% of total alkaloids. The alkaloidal content is adjusted to this strength by the addition of rice starch.
Tinctura Aconiti	Prepare by the use of 70% alcohol (by volume). The tincture shall assay 0.05% of total alkaloids.
Extractum Aconiti	The extract shall contain 1% of total alkaloids.
Syrupus Aconiti	Prepare the syrup by the use of 5% of the tincture. It should contain 0.0025% of total alkaloids.
Atropa Belladonna L.	
Belladonnæ folium	The dried leaves.
Pulvis Belladonnæ	The powder shall contain at least 0.30% of total alkaloids (provisional standard). It shall be adjusted to this strength by the addition of rice starch.
Tinctura Belladonnæ	Prepare by the use of 70% alchohol (by volume). The tincture shall assay at least 0.03% of total alkaloids (provisional standard).
Extractum Belladonnæ	Prepare an extract free from chlorophyl by means of 70% alcohol (by volume). The evaporation of the liquid extract shall be conducted at a temperature below 50° C. The extract shall contain at least 1.30% of total alkaloids (provisional standard).
Syrupus Belladonnæ	Prepare using 5% of the tincture.
Unguentum Belladonnæ	The ointment shall contain 10% of the Extract of Belladonna.
Lytta vesicatoria Fabr., **Epicauta Gorhami** Mars and other vesicatory insects	
Pulvis Cantharidis	The powder shall contain at least 0.6% of cantharidin.
Tinctura Cantharidis	Prepare by means of 70% alcohol (by volume) a tincture containing 0.06% of cantharidin.
Colchicum autumnale L.	
Colchici semen	The dried seeds.
Pulvis Colchici	The powder shall contain 0.4% of colchicine. It shall be adjusted to this strength by the addition of rice starch.
Tinctura Colchici	Prepare by the use of 70% alcohol (by volume) a tincture containing 0.04% of colchicine.
Extractum Colchici	The extract shall contain 2% of colchicine.
Digitalis purpurea L.	
Digitalis folium	Leaves dried at 55–60°.
Pulvis Digitalis	

Sirupus Digitalis	Prepare using 5% of the tincture.
Tinctura Digitalis	Prepare from 10% of the drug (by weight) using alcohol 70% (by volume).
Hyoscyamus Niger L.	
Hyoscyami folium	The dried leaves.
Tinctura Hyoscyami	Prepare from 10% of the drug (by weight) using alcohol 70% (by volume).
Extractum Hyoscyami	Prepare an extract free from chlorophyll by means of alcohol 70% (by volume). The liquid extract shall be evaporated at a temperature below 50° C.
Uragoga Ipecacuanha H. Bn.	
Ipecacuanhæ radix	The dried root.
Pulvis Ipecacuanhæ	The powder shall contain 2% of total alkaloids.
Sirupus Ipecacuanhæ	Prepare the syrup using 10% of the tincture.
Tinctura Ipecacuanhæ	Prepare by means of alcohol 70% (by volume) a tincture containing 0.2% of total alkaloids.
Lobelia inflata L.	
Lobeliæ herba	Dried flowering herb.
Tinctura Lobeliæ	Prepare from 10% of the drug (by weight) using alcohol 70% (by volume).
Strychnos Nux Vomica L.	
Strychni semen	The dried seed.
Pulvis Strychni	The powder shall contain 2.5% of total alkaloids.
Tinctura Strychni	Prepare by means of alcohol 70% (by volume) a tincture containing 0.25% of total alkaloids.
Extractum Strychni	Prepare by means of alcohol 70% (by volume) a defatted extract containing 16% of total alkaloids.
Opium	Dried latex of the fruit of *Papaver somniferum* L.
Pulvis Opii	The powder dried at 60° C. shall contain 10% of anhydrous morphine. It shall be brought to this standard by the addition of rice starch or sugar of milk.
Pulvis Opii et Ipecacuanhæ Compositus	The powder shall contain 10% of powdered opium and 10% of powdered ipecac.
Tinctura Opii	Prepare by means of alcohol 70% (by volume) a tincture containing 1% of anhydrous morphine.
Tinctura Opii crocata seu Laudanum Sydenhami	The tincture shall contain 1% of anhydrous morphine.
Tinctura Opii Benzoica	The tincture shall contain 0.05% of anhydrous morphine.
Sirupus Opii	Shall contain 0.05% of anhydrous morphine.
Sirupus Opii dilutus seu Sirupus Diacodii	Shall contain 0.01% of anhydrous morphine.
Strophanthus gratus Frank.	
Strophanthus hispidus DC.	
Strophanthus Kombe Oliv.	
Tinctura Strophanthi	Take 10% by weight of the seeds of *Strophanthus hispidus* or of *Strophanthus Kombe*, defat them and prepare a tincture by means of alcohol (70% by volume).
Tinctura Strophanthi grati	Prepare this tincture in the same manner as the preceding using the seeds of *Strophanthus gratus*.
Claviceps purpureæ Tul.	
Secale cornutum	Ergot of rye of the current year preserved whole.
Extractum Secalis cornuti aquosum	Prepare an aqueous extract and dissolve this in alcohol 60% (by volume).
Extractum Secalis cornuti fluidum	Prepare to represent 100% of the drug.
Extractum Secalis cornuti fluidum acidum	Prepare to represent 100% of the drug.

Acidum Hydrocyanicum dilutum	Shall contain 2% of hydrocyanic acid.
Aqua Laurocerasi	Shall contain 0.10% of total hydrocyanic acid.
Aqua Amygdalæ amaræ	Shall contain 0.10% of total hydrocyanic acid.
Solutio Phenoli	Shall contain 2% of phenol.
Natrii Arsenas	The crystallized salt assaying 36.85% of arsenic pentoxide.
Solutio Arsenicalis seu Fowleri	A neutral solution assaying 1% of arsenic trioxide.
Sirupus Ferrosi Iodidi concentratus	Shall contain 5% by weight of ferrous iodide.
Sirupus Ferrosi Iodidi dilutus	Shall contain 0.5% by weight of ferrous iodide.
Solutio Iodi spirituosa	Formula: Iodine 6.5 Gm., Potassium iodide 2.5 Gm., Alcohol 91 Gm. of 90% (by volume). The potassium iodide may be replaced by an equivalent amount of sodium iodide.
Cocainæ Hydrochloridum	The anhydrous salt.
Unguentum Hydrargyri	Prepared to contain 30% of mercury.
Sirupus Morphini	Shall contain 0.05% of morphine hydrochloride.
Sirupus Codeini	Shall contain 0.2% of codeine in the form of the alkaloid or its salt.
Sirupus Chlorali Hydrati	Shall contain 5% of chloral.
Sirupus Hydrargyri Iodidi cum Kalii Iodidi	Shall contain 0.05% of mercuric iodide and 2.5% of potassium iodide.
Hydrastis canadensis L.	
Hydrastis rhizoma	The dried rhizome and adventive roots.
Pulvis Hydrastidis	Shall contain at least 2% of hydrastine.
Tinctura hydrastidis	Prepare by means of alcohol 60% (by volume) a tincture containing 0.2% of hydrastine.
Extractum Hydrastidis fluidum	Shall contain 2% of hydrastine.
Urginea Scilla Steinh.	
Scillæ bulbus	The dried median scales of the white variety.
Tinctura Scillæ	Prepare from 10% (by weight) of the drug and alcohol 60% (by volume).
Acetum Scillæ	Prepare from 10% of the drug.
Oxymel Scillæ	Shall contain 50% of vinegar of squill.
Cannabis sativa L. var. **indica** Lamk.	
Cannabis indica herba	The flowering and fruit tops (not deprived of resin) of the female plant cultivated in the East Indies.
Extractum Cannabis indicæ	Prepare by means of alcohol 90% (by volume).
Tinctura Cannabis indicae	Prepare from 10% by weight of the drug using alcohol 90% (by volume).
Solutio Nitroglycerini spirituosa	Shall contain 1% of nitroglycerin by weight.

Normal Drop Counter.

ARTICLE IX. The contracting Governments shall adopt a normal drop counter which will deliver 20 drops per gram of distilled water at 15° C.

Arsenobenzenes.

ARTICLE X. After having listened to an explanation of the work of Dr. DeMyttenaere on the chemical control of the arsenobenzenes, the Second International Conference decided to call the attention of the various Governments represented to the necessity of associating the chemical control of the arsenobenzenes with the biological control.

As a consequence the respective Governments are invited to designate some person who will transmit to the permanent Secretariat the results of their researches on identical samples of these drugs with a view to establishing the modalities of chemical control to be adopted.

Nomenclature.

ARTICLE XI. The international nomenclature shall be written in Latin.

ARTICLE XII. The contracting countries may conserve their own nomenclature by giving at the same time the international title.

ARTICLE XIII. The vegetable and animal species shall be designated by their scientific Latin names. For the vegetable species, the Index Kew and its supplements are adopted.

ARTICLE XIV. The vegetable and animal drugs shall be designated by the Latin names of the species from which derived, except in certain cases where usage sanctions commonly used Latin name. There shall be prepared a list of such titles.

ARTICLE XV. In the naming of vegetable drugs, the name of the vegetable shall precede that of the part of the plant used.

ARTICLE XVI. The titles of drugs shall be written in the singular.

ARTICLE XVII. In the nomenclature of galenical preparations, the name of the preparation shall precede that of the drug from which it is made.

ARTICLE XVIII. The International Secretariat of Pharmacopœias, after having consulted with the committees of revision of the various pharmacopœias, shall define the following terms used in pharmacy: ceratum, decoctum, infusum, extractum, pomatum, sirupus, solutio, tinctura, unguentum, etc.

ARTICLE XIX. The title of decoction or infusion shall not be given to mixtures of a fluid-extract and water.

ARTICLE XX. In the naming of aqueous solutions, the nature of the solvent shall not be indicated. It shall be indicated in other cases.

ARTICLE XXI. In the naming of alcoholic extracts, the nature of the solvent shall not be indicated. It shall be indicated in other cases. In all cases the consistence of the extract shall be indicated.

ARTICLE XXII. In the naming of alcoholic tinctures, the nature of the menstruum shall not be indicated. It shall be indicated in other cases.

ARTICLE XXIII. The name, Tincture, shall not be given to simple solutions of chemical substances.

ARTICLE XXIV. The names of simple bodies shall be in accord with their chemical symbols.

ARTICLE XXV. Account should be taken as far as possible of their chemical functions.

ARTICLE XXVI. In the naming of salts the international Latin title shall begin with that of the base expressed in the genitive.

ARTICLE XXVII. Except in the case of necessity, non-scientific names shall not be used as international titles.

ARTICLE XXVIII. In the case of medicaments for which the scientific names are too long, the International Secretariat shall prepare a list of short titles after consultation with the committees of revision of the various pharmacopœias.

ARTICLE XXIX. The use of names which may be confused with those used to describe products destined for alimentation shall be avoided as far as possible.

Maximum Doses.

ARTICLE XXX. By international maximum doses is to be understood those doses administered by mouth to adults once in 24 hours, which the pharmacist may not exceed, except when formally ordered to do so by the physician.

ARTICLE XXXI. The permanent Secretariat was directed by the Conference to consult with the committees of revision of the pharmacopœias of the different nations for the purpose of determining if all of the doses given in the "Table of Maximum Doses" are acceptable to them, and in cases of disagreement to obtain the figures which they propose, together with the reasons for the changes desired.

When the Secretariat has obtained this information, it shall request of those committees whose figures differ from those of the majority to accept the proposals of the majority in order that an international agreement may be made.

When this has been completed, the Secretariat shall communicate to the Governments the list of maximum doses upon which an agreement has been reached.

ARTICLE XXXII. The conference calls the attention of the International Secretariat of Pharmacopœias to the desirability of submitting for study in all countries the proposition of adopting maximum international doses for certain very active medicaments intended for administration by other channels than the mouth, notably, subcutaneously and intravenously.

ARTICLE XXXIII. For the purpose of establishing definitely the responsibilities of the

physician and the pharmacist in the dispensing of heroic medicaments for which maximum doses have been provided by the pharmacopœias or international agreement, the Conference invites the Governments to require that in all prescriptions where a maximum dose is exceeded, this dose be repeated in letters and confirmed by a new signature or the initials of the physician.

Permanent Secretariat.

ARTICLE XXXIV. The Conference decided that there is need for the creation of an international body for the unification of pharmacopœias.

ARTICLE XXXV. The Organization Committee shall, through the Belgian Government as the intermediary, take the necessary steps to bring this matter before the League of Nations in view of the definite constitution of the permanent Secretariat and of the committees created by the Conference.

During the interim and acting essentially in a provisional capacity the Committee of Revision of the Belgian Pharmacopœia is charged with the duty of functioning as the projected organization in order that no time may be lost and to enable the Secretariat to continue the work uninterruptedly when it is definitely constituted.

ARTICLE XXXVI. In addition to the transmission of documents and the coördination of work concerning the unification of pharmacopœias, the Secretariat was directed to undertake in a general way to carry out the following lines of work proposed by Prof. Van Itallie:

1. Elaborate amendments and additions to the Brussels Convention with respect to the formulæ of heroic remedies.
2. Study the methods for determining the active principles of heroic remedies and draw up proposals having for their object the fixing of the active-principle content of these remedies.
3. Formulate propositions which will lead to uniformity in the nomenclature of the pharmacopœias.
4. Draw up proposals for arriving at unification in the description of chemical products, their identification, analysis, etc., in the pharmacopœias.

Chemical Assays.

ARTICLE XXXVII. The Conference is of the opinion that it is expedient to submit to an international committee the study of the unification of methods for the chemical and physicochemical assay of the heroic medicaments.

It was agreed that this committee should be composed of seven members chosen from among the best qualified representatives of the different nations. The organization of the committee was effected by the members present and rules governing its activities were formulated during the course of the Conference. The following were appointed members of the committee:

Messrs.	Van Itallie (Holland), *President*	Gadamer (Germany)
	Goris (France)	Eder (Switzerland)
	White (Great Britain)	Asahina (Japan)
	DuMez (United States)	

The Conference decided to request the Committee on Organization to inform the Committee on Hygiene of the League of Nations as soon as possible of the creation of this international committee for the study of the chemical assay of heroic medicaments and to request their concurrence.

Galenical Preparations.

ARTICLE XXXVIII. The Conference is of the opinion that it is expedient to submit to an international committee the study of the unification of methods of preparation of heroic galenicals. It was agreed that this committee should be composed of eight members chosen from among the best qualified of the different nations. The following were appointed members of this committee:

Messrs.	Golaz (Switzerland), President	Meulenhoff (Holland)
	Tiffeneau (France)	Vintilesco (Roumania)
	Greenish (Great Britain)	Von Friedrichs (Sweden)
	Cook (United States)	Wattiez (Belgium)

The Conference decided to request the Committee on Organization to inform the Committee on Hygiene of the League of Nations as soon as possible of the creation of this committee for the

study of the unification of methods of preparation of heroic galenicals and to request their concurrence.

Recommendations.

Nomenclature.

1. It is desirable that the international Latin name of each medicament be placed at the head of the descriptive monograph thereon in the various pharmacopœias.

2. It is desirable to adopt a single nomenclature for chemical compounds analogous to that employed for these compounds, notably, in the pharmacopœias of the United States, Great Britain and Sweden.

Biologic Methods.

3. The Conference, having taken notice of the report of the Committee on Organization on the fifth topic of the program and of the Second International Conference on the Biologic Standardization of Certain Medicaments, makes the following recommendations:

1. That biologic methods of standardization be introduced into the pharmacopœias in so far as they are recognized as being necessary.

2. That the pharmacopoeias, except for sufficient reasons, adopt the methods which have been or may be recommended by the Committee on Hygiene of the League of Nations.

3. That the committees of revision of the pharmacopœias transmit to the Committee on Hygiene of the League of Nations all observations or suggestions concerning substitute methods.

Containers.

4. The Conference decided that it would be inexpedient, provisionally, to regulate the use of containers internationally and proposes that the question of labelling and other measures of precaution be studied with the view to the adoption of international regulations.

Miscellaneous.

5. The Conference expresses the hope of seeing the text of the Brussels Convention in the new pharmacopœias.

6. The Conference expresses the wish that all of the pharmacopœial committees of revision be made permanent bodies.

7. The Conference expresses the hope of seeing published as soon as possible all modifications pertaining to the pharmacopœias.

SECRETARIAL OFFICES OF THE AMERICAN PHARMACEUTICAL ASSOCIATION—REMOVAL OF THE JOURNAL OFFICE TO BALTIMORE.*

WITH the approval of the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION the offices of the Secretary and of the Editor of the JOURNAL will be combined and located at 10 West Chase Street, Baltimore, Md., after January 1, 1926.

The Editor signified his willingness to go wherever the Council decided that the office of the JOURNAL should be located when combined with that of the Secretary. He is deeply appreciative of his friendly reception in Philadelphia and grateful for the consideration given him by the members of the Philadelphia Drug Exchange, in whose office the JOURNAL has been located for the past ten years.

This is a period of preparation for the permanent headquarters of the ASSOCIATION and every assistance should be given Secretary E. F. Kelly in his work; the members are assured of his whole-hearted devotion and earnest efforts in behalf of the ASSOCIATION. E. G. E.

* See Council Letter No. 3, under "Association Business" in this issue of the JOURNAL.

SCIENTIFIC SECTION

THE OIL OF PONGAMIA GLABRA.[1,2]

BY GEORGE D. BEAL AND MUPPANA C. T. KATTI.[3]

Pongamia glabra is a tree which grows in the jungles over the greater part of India. It is known in different vernacular tongues as "pongam," "hongey" and "karanja." The tree, belonging to the *Leguminosæ*, is almost evergreen, the glabrous bright green leaves being replaced in March by new ones as rapidly as they fall. The flowers, appearing in April or May, are white and pale mauve, and are borne in racemes. The seed pod is woody and glabrous, from one-eighth to one-fourth inch thick and one and one-half to two inches in length. It usually contains one abortive and one perfect seed, the latter resembling a lima bean. The seed weighs about 1.4 grams, consists of about 5% husk and 95% kernel and has a red color becoming dark brown on storage.

The seeds contain from 27 to 33% of oil. As expressed the oil is usually thick and reddish-brown, and has been used as a burning oil and for medicinal purposes. Its therapeutic properties have been applied in the treatment of skin diseases, rheumatism and ulcers. It appears to have been used both by native apothecaries and European physicians (1). The early Sanskrit medical literature of India contains frequent references to the use of one part or another of the tree. Not only has the oil been used in medicine but also a paste of the unripe seed pulp, poultices of the leaves and the milky juice of the root bark.

The present uses of the oil are for illumination and for leather dressing. The crude oil has a bitter taste and an unpleasant odor, not removed by common refining operations, which militate against its availability as a food oil, although it can be produced abundantly and cheaply.

Lewkowitsch (2) and Grimme (3) have determined the constants of the oil as follows:

	Lewkowitsch. A.	Lewkowitsch. B.	Grimme.
Specific gravity.	0.9352 $\frac{40°}{40°}$	0.9240 $\frac{40°}{40°}$	0.9289 $\frac{30°}{30°}$
Saponification No.	178.0	183.1	185.1
Iodine No.	94.0	89.4	77.3
Unsaponifiable	9.22	6.96	8.16
Reichert-Meissl No.	.....	1.10	.....
Acid No. (as % oleic acid)	3.05	0.50	21.27
Melting point of fatty acids	44.4°	.....	43.8°

NOTE.—Sample A was prepared in Lewkowitsch's laboratory by extracting the seeds with ether; sample B was obtained from India. Grimme's oil was obtained by ether extraction.

Grimme determined the following constants for the mixed fatty acids:

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[1] Contribution from the Laboratory of Analytical Chemistry of the University of Illinois.

[2] Read before Scientific Section, at the 73rd Annual Meeting, Des Moines, Iowa, August 24–28, 1925.

[3] An abstract of a thesis presented by M. C. T. Katti in partial fulfillment of the requirements for the degree of Master of Science in Chemistry in the Graduate School of the University of Illinois, 1924.

Melting point	43.8°
Freezing point	42.5°
n^{50}	1.4637
Neutralization value	180.1
Iodine No.	78.8
Mean molecular weight	308.7

Desai (4) by analysis of the mixed acids has determined their composition as follows:

Myristic acid	0.23%	Dihydroxy stearic acid	4.36
Palmitic acid	6.06	Linolenic acid	0.46
Stearic acid	2.19	Linolic acid	9.72
Arachidic acid	4.30	Oleic acid	61.30
Lignoceric acid	3.22	Unsaponifiable	3.56

The unsaponifiable matter was found to contain brasicasterol and sitosterol, together with an oil of high index of refraction.

EXPERIMENTAL.

Having in mind the fact that this oil can be easily produced in large amounts, the authors decided to make a study of the constants of the oil and the possibilities of refining in such a way as to remove the unpleasant odor and bitter taste. The refining operations could not be carried out on a large scale to test the commercial possibilities of the methods, but they served to indicate the direction in which large scale methods might succeed. Some interesting observations were also made on constituents of the oil and the seed.

In determining the constants of the oil two samples were used. Sample A which was obtained through the courtesy of the firm of Brahmappa Tavanappanavar, Davangere, India, was freshly expressed by means of an Anderson "expeller" three months before, and was of a bright yellow color gradually turning to orange. Sample B was from Central India and was a comparatively old sample, dark red in color.

The constants of the oil as determined by the authors for Sample A are:

Saponification No.	189.1
Iodine No. (Hanus)	89.1
Reichert-Meissl No.	1.04
Unsaponifiable matter	2.4%
Acid No. (calculated as oleic)	8.36%
Soluble acids (calculated as butyric)	1.95%
Insoluble acids (with unsaponifiable matter)	93.25%
Neutralization value of insoluble acids	196.1
Mean molecular weight of insoluble acids	286.0
Iodine No. of insoluble acids (Hanus)	92.6
Saturated acids (lead salt-ether method)	20.16% of oil
Unsaturated acids (lead salt-ether method)	69.92% of oil
Saturated acids (combination of barium salt-benzene and lead salt-ether methods)	21.30%
Unsaturated acids (combination of barium salt-benzene and lead salt-ether methods)	72.70%

For determination of the unsaponifiable matter the oil was saponified with alcoholic potassium hydroxide, and after boiling off the alcohol the soap was dissolved in water and this solution

shaken out repeatedly with ether in a separatory funnel. The ether extracts were combined and washed several times with water, finally distilling off the ether and weighing the residue.

The Acid Number was determined by shaking 20 grams of the oil with 100 cc. of neutral 95% alcohol and titrating the dissolved acid with 0.1 normal potassium hydroxide, using phenol phthalein as the indicator.

The saturated and unsaturated acids were separated according to the lead salt-ether method of Gusserow and Varrentrapp as modified by Muter and de Koningh (5). In this method the separation is not sharp due to the mutual solubilities of the two groups of lead salts, one in the other.

Farnsteiner (6) has shown that when the barium salts of fatty acids are treated with moist benzene (95% benzene, 5% alcohol of 95%) the salts of the less saturated acids dissolve while those of the saturated acids and of the oleic acid are insoluble. The second separation of the saturated and unsaturated acids was made by Farnsteiner's method. The saturated acids, including the oleic acid, were then treated by the lead salt-ether method, and the oleic acid added to the less saturated acids. During the benzene separation it was found that some of the barium oleate was dissolving in the benzene with the salts of the less saturated acids. The Iodine Number of the oleic acid was determined and found to be 86.5 (theory 90.07).

Preliminary Bleaching Experiments.—1. The oil was shaken with Lloyd's reagent, as a substitute for Fuller's earth, and filtered through paper.

2. The oil was treated with bone ash, using the same procedure as with Lloyd's reagent.

3. The oil was saturated with sulphur dioxide and allowed to stand for 24 hours, then filtered from a spongy precipitate.

4. The oil was shaken with a slightly greater volume of strong sodium hydroxide solution than was required to combine with the free acids. The residual oil was washed with water and dried with calcium chloride.

5. The oil was shaken for 90 minutes with coarsely powdered calcium chloride and filtered cold.

6. Live steam under pressure was admitted into the oil for 10 minutes, the water separated and the oil filtered.

7. The oil was mixed with cobalt oxalate, heated to 80° and oxygen bubbled through for 15 hours, then filtered.

8. Five grams of oil, 2.002 Gm. of potassium dichromate and 1 cc. of dilute sulphuric acid were shaken together in a test-tube and the oil separated.

Samples A and B were subjected to these treatments, with the following results, sample A being originally orange yellow, while sample B was dark brownish red.

	A.	B.
Experiment 1	No color change	No color change
Experiment 2	No change	No change
Experiment 3	Bright yellow	Bright yellow
Experiment 4	No change	Bright red
Experiment 5	Bright yellow	Bright yellow
Experiment 6	No change	No change
Experiment 7	No change	Bright red
Experiment 8	Light yellow	Bright yellow

Further Attempts at Refining.—The three things to be accomplished in refining this oil are, the removal of the bitter substance, the removal of the odorous principle and bleaching. The procedures attempted on a larger scale were extraction

with ethyl alcohol, treatment with alkali, blowing with superheated steam and the use of "Norit" vegetable carbon. The oil used in these experiments was freshly received from India in cans, was turbid and of a dark red color. The oil was filtered to remove suspended matter before any of the treatments mentioned were used.

A. Four hundred and fifty grams of the oil was blown with superheated steam in a 2-liter flask for $2^1/_2$ hours. After separating as much water as possible from the oil 25 cc. of a 20% solution of sodium hydroxide was added with vigorous shaking and the oil filtered from the soap by means of fine cheese cloth. The filtered oil was washed with water until free from soap.

Neither the color nor taste of the oil had undergone any change, but the odor was much improved. The residual oil was then shaken with four 250-cc. portions of cold 76% alcohol. Some difficulty was met with in separating the oil and alcohol. The separated oil was somewhat lighter in color and was nearly free from the bitter principle.

The oil was then mixed with 3 grams of Norit and warmed on the steam-bath for 90 minutes with frequent shaking. After standing over night it was filtered, when no further change in color could be observed and only a slight bitter taste remained. The oil was finally shaken with three successive portions of cold 95% alcohol, 15 cc. each. The alcohol did not separate completely but left a turbid oil, which was cleared by heating on the steam-bath under a pressure of 30 mm. of mercury until the alcohol was removed. The final yield was 287 grams of orange-colored oil free from bitter taste and unpleasant odor.

B. Five hundred grams of oil was blown for five hours with steam from a line carrying 40 pounds pressure. After separating the water the oil was shaken with 20 cc. of 40% sodium hydroxide solution, then allowed to stand for eight hours, after which the oil was filtered from the soap by means of paper. The filtered oil had undergone no appreciable change in color, so was shaken six times with 350 cc. portions of cold 95% alcohol. The suspended alcohol was removed as above, and the residual oil mixed with 3 grams of Norit and warmed for one hour at 27–28° under a pressure of 20 mm. of mercury. The oil was filtered at once, obtaining 348 grams of a clear, light orange-colored oil.

C. Eight hundred grams of the oil was gently shaken with 15 cc. of 40% sodium hydroxide. The yellow foots were allowed to settle and the oil filtered through cotton. In order to obtain complete recovery the foots were washed with low boiling petroleum ether from which the oil was recovered by distillation of the solvent. The oil was next shaken six times with 750-cc. portions of 95% alcohol, then treated with superheated steam for three hours, dried under diminished pressure and treated with 7 grams of "Norit." In all 709 grams of oil was recovered. The oil was bright lemon yellow in color and neither the bitter taste nor the unpleasant odor were apparent.

D. Seven hundred and fifty grams of oil was shaken six times with 750 cc. of cold 95% alcohol and the oil then blown with superheated steam for four hours. The oil was finally dried under diminished pressure and filtered. The yield of clear yellow oil was 653 grams, in which neither unpleasant taste nor odor were apparent.

E. Eight hundred grams of oil was placed in a 3-liter round bottom flask having a two-hole stopper. The stopper carried a reflux condenser and a tube reaching to the bottom of the flask and connected with a second flask containing 1500 cc. of 95% alcohol. The alcohol was distilled, the vapors bubbling through the oil and the condensed alcohol running back into the flask. After cooling the alcohol was returned to the alcohol flask and the distillation repeated, this time leaving about 200 cc. of alcohol undistilled. This residue was removed and the process repeated, making in all six extractions. The oil was finally treated with superheated steam and filtered as in D with a yield of 643 grams of oil free from objectionable odor and taste.

Where alkali refining was attempted the foots were removed with difficulty and with a potential loss of oil. The odor was most effectively improved by superheated steam. Norit treatments were of little value. When the alcoholic washings were concentrated some oil separates, but as the alcohol is largely removed the mixture again becomes homogeneous. The oil separates again on adding a little alcohol, and contains the bitter principle.

The effect of the various treatments upon the appearance of the oil and its chemical constants is as follows:

Sample.	Yield.	Color.	Taste.	Odor.	Acid No.	Iodine No.
Original		Dark Red	Bitter	Objectionable	8.06	88.3
A	63.8%	Orange	Free from bitter material	Free from objectionable odor	0.30	87.7
B	69.6%	Bright orange	"	"	0.27	88.2
C	88.6%	Lemon yellow	"	"	0.19	87.8
D	87.0%	Yellow	"	"	0.55	85.4
E	80.0%	"	"	"	0.26	86.9

The Odorous Principle of the Oil.—Since the odor of the oil was improved by treatment with superheated steam, the distillate obtained with superheated steam from 500 grams of oil was examined for a volatile oil to which the characteristic odor and taste might be attributed. About 800 cc. of distillate having the odor of the oil was obtained. This distillate was concentrated by cohobation under diminished pressure, as shown by the following table.

No.	Volume of liquid.	Temperature.	Pressure mm. Mercury.	Volume distillate.
I	800 cc.	26–29°	22–23	500 cc.
II	500 cc.	24–27°	19–20	260 cc.
III	260 cc.	24–27°	19–20	125 cc.

Residue I was turbid, yielding its turbidity to ether. On evaporating the ether 2–3 drops of oil were obtained having a pronounced odor, but not that of the oil. Distillates I, II and III were all clear, and in each the odor of the oil was intensified. Residues II and III were clear and without odor.

Thirty cc. of residues II and III and of distillate III were each titrated with 0.0999 *N* sodium hydroxide. Residue II consumed 0.27 cc., residue III 0.23 cc. and distillate III 0.17 cc.

Two drops of 0.1 *N* potassium permanganate were added to 10 cc. of each of the three solutions mentioned above, in order to test for unsaturation. Residues II and III showed no immediate reaction but in 15–20 minutes the color of the reagent was changed. Distillate III, however, instantly decolorized the permanganate. Distillate III also decolorized bromine water.

Fifty cc. of distillate III was shaken with 70 cc. of ether. The odor was completely removed from the aqueous solution. The ether layer was dried over calcium chloride, when the odor was so pronounced as to almost entirely mask the odor of the ether. The ether was evaporated in a gentle current of air but no visible residue was obtained. The pronounced odor of the oil was apparent for about four hours, but disappeared entirely.

Apparently the odorous principle of the oil is very volatile with steam and in the absence of the oil evaporates rapidly and spontaneously. It is apparently unsaturated and soluble in both water and ether, but can be completely extracted by ether from the water.

The Bitter Principle of the Oil—Preliminary Examination.—Five grams of the residue obtained by evaporating the alcoholic extract from Method A above was dissolved in 40 cc. of ether and the solution extracted with three successive portions of normal sulphuric acid. This extract did not become turbid when rendered neutral or alkaline, and yielded no precipitate with alkaloidal reagents.

The alcoholic solution from Method B, measuring about 1400 cc. was concentrated to 200 cc., 5 grams of oil separating at this time. After removing the separated oil the extract was saponified with potassium hydroxide, and after evaporating the alcohol and dissolving the soap in water the solution was extracted with eight successive portions of ether, 50 cc. at a time. The

extract obtained upon evaporation of the ether was a thick, orange-brown colored syrupy mass, which was very bitter.

The residual soap solution was acidified with hydrochloric acid, obtaining a flocculent precipitate above an oily liquid at the bottom of the beaker and an oily layer of fatty acids floating on the water. The bottom oil was dark red and the precipitate light yellow. The oil was apparently more of the unsaponifiable matter mentioned in the previous paragraph which had escaped the ether extraction.

The flocculent precipitate after being washed free from hydrochloric acid could not be crystallized from alcohol, it being apparently too soluble. Petroleum ether of 30–50° boiling point dissolved very little. Benzene dissolved about 30–35%, the remainder being entirely insoluble in this solvent. Evaporation of the benzene left a gummy residue too small for further study. The benzene insoluble portion was light gray in color and distinctly acidic. After drying it melted at 205–207°. 0.1100 gram dissolved in alcohol required 5.77 cc. of 0.0999 *N* sodium hydroxide for neutralization, giving a neutral equivalent of 192.6.

When Extracts C, D and E were treated in the same fashion the same unsaponifiable bitter oil was obtained, but no trace of the acidic precipitate. The precipitate was obtained in a preliminary test on the extract in Method A. In Methods A and B the oil was treated with steam before the alcohol extraction, in C, D and E after the alcohol extraction.

Examination of the Bitter Matter.—This, a thick dark red syrup, could not be crystallized directly after distillation of the ether, but after standing about three weeks it became turbid due to the separation of an amorphous yellow solid. When washed with 95% alcohol the bitter gummy material dissolved leaving a yellow amorphous powder. The alcoholic extracts from Method E on concentration and standing over night gave a similar amorphous deposit. Very little of this material was obtained by the third and subsequent extractions. Sixteen hundred grams of oil by Method E gave 15.6 grams of the solid in this way. The unsaponifiable matter obtained from the residual alcoholic extracts yielded additional solid material.

The bitter material was fused with phthalic anhydride in an attempt to form a half phthalic ester of any hydroxy compound which might be present. The fusion mixture was taken up with benzene and extracted with sodium carbonate solution, but this solution, after saponification and acidification, yielded nothing to ether extraction. Apparently no alcoholic grouping was present.

Five grams of the bitter material was refluxed with 6 grams of potassium permanganate and 2 cc. of 15% sodium hydroxide in 100 cc. of water for one hour. Upon filtration a light brown filtrate appeared which became turbid when acidified. Extraction with ether yielded a brownish red amorphous solid from which low boiling petroleum ether extracted a whitish granular product soluble in hot water. The residue from the hot water treatment was a brown gum. This material, weighing about 0.01 Gm. was dissolved in neutral alcohol, when 4.8 cc. of 0.0999 *N* sodium hydroxide was required for its neutralization.

The whitish granular material was acidic, softened at 103° and melted at 113°. Its solution in hot water gave upon cooling tiny white crystals which softened at 111° and melted at 114°. This substance was possibly slightly impure dihydroxystearic acid, from oleic acid present in the oil. The quantity available was too small for further work.

Fifty grams of the bitter material was distilled under a pressure of 5–6 mm. of mercury and the distillate collected between 150° and 180°. The portion weighed 9.6 Gm. and was a light orange-brown oil of a peculiar smell and very unpleasant taste. Its refractive index was 1.4764 at 25°. The residue in the distilling flask solidified on cooling to a sticky varnish. The iodine number of the original bitter material by Hanus' method was 67.91, of the distillate 86.21 and of the residue 45.00.

The unsaponifiable bitter material was soluble in ether, chloroform, benzene and ethyl alcohol, but only very slightly so in petroleum ether. Its odor was similar to but not identical with that of the crude oil. One drop of this substance mixed with 2 cc. of acetic anhydride gave a bright red color upon the addition of one drop of 1:1 sulphuric acid. The color was changed to yellow upon the further addition of acid. This reaction is apparently characteristic for pongam oil, since it was given by both the crude and refined oil, and the hydrogenated crude fat. It was not obtained with the hydrogenated refined fat. A comparison of the reaction obtained with various oils follows:

Common name.	Botanical Source.	Reaction.
Cotton seed oil	*Gossypium hirsutum*	Pale pink
Margosa or neem oil	*Melia azadirachta*	Moderate dark yellow
Mahua fat	*Bassia latifolia*	Pink
Safflower oil	*Carthamus tinctoria*	Apple green
Nigerseed oil	*Guizotia abyssynica*	Light bluish green
Coconut oil	*Cocos nucifera*	Greenish
Castor oil	*Rincinus communis*	Yellowish
Peanut oil	*Arachis hypogaea*	Pale pink
Sesame oil	*Sesamum indicum*	Peacock blue
Linseed oil	*Linum usitatissimum*	Light yellow green
Pongam oil	*Pongamia glabra*	Bright red
Refined pongam oil	*Pongamia glabra*	Orange-red
Hydrogenated pongam oil	*Pongamia glabra*	Orange-red
Hydrogenated refined pongam oil	*Pongamia glabra*	Colorless

Examination of the Crystalline Material.—The yellow amorphous powder previously mentioned crystallized from ether in small pale yellow needles softening at 151° and melting completely at 153.5°. Repeated recrystallizations from 95% alcohol finally yielded white shining needles softening at 157.5° and melting completely at 159°. A small amount of gummy semi-solid material was obtained as residue upon evaporation of the final mother liquors.

All of the solid material obtained from the alcohol extracts in refining method (E) was combined and treated with alcoholic potash to saponify any fat present, the solution evaporated to dryness and extracted with ether in a Soxhlet apparatus. After washing the extract with distilled water to remove any soap the solvent was evaporated and the residue repeatedly crystallized from absolute methyl alcohol. All of the crops of crystals obtained were in the form of white needles and melted at 157.5–159°.

That the material evidently existed in the oil and, therefore, in the seed and was not a product of hydrolysis was shown by the fact that the crude oil (which was turbid) on standing to clarify deposited a mucilaginous substance mixed with yellow granules of the size of poppy or mustard seed. The material was separated by filtration and the mucilage washed off mechanically by means of ether. The granules upon solution in methyl alcohol yielded crystals identical with the above. Similar material was obtained from the press cake.

The mucilage washed from the nodular deposit by means of ether was separated by filtration and washed repeatedly with ether. The material remaining on the paper was viscous and as bitter in taste as the unsaponified bitter substance previously mentioned. While insoluble in ether it dissolved in chloroform and gave a similar reaction with acetic anhydride and sulphuric acid.

Desai and others (4) claim to have isolated from the unsaponifiable matter of pongam oil two phytosterols, brassicasterol, m. p. 147° and sitosterol, m. p. 137°. An exhaustive fractional crystallization of the solid material from the unsaponifiable matter failed to yield a trace of either of these substances.

Supposing this material to be a phytosterol a small portion was warmed with acetic anhydride. The product obtained melted at 157.5–159° after being twice crystallized and upon admixture with the original substance no depression of the melting point was noted. We conclude that the material was not acetylated. Fig. 1.

Another portion was boiled with acetic anhydride for two hours. The material recovered by crystallization had undergone no change in its physical properties. Substitution of acetyl chloride for acetic anhydride in the attempted acetylation was without result. Fig. 2.

On solution in chloroform and addition of Hanus' solution there was some reaction with iodine indicated by the titration of the iodine with sodium thiosulphate. However, upon separat-

ing the chloroformic solution after the titration and removing the solvent by evaporation, the residue after one recrystallization melted at 157.5–159°. Fig. 3. Figures 4 and 5 represent the crystals of the compound as generally obtained from concentrated solutions, Figure 6 as obtained from dilute solution.

The material dissolved in chloroform did not rotate polarized light. An alcoholic solution yielded no precipitate with an alcoholic solution of digitonin. The substance was very sensitive to sunlight. The white color changed through light yellow to bright yellow and finally to bright orange-red within 4–5 hours.

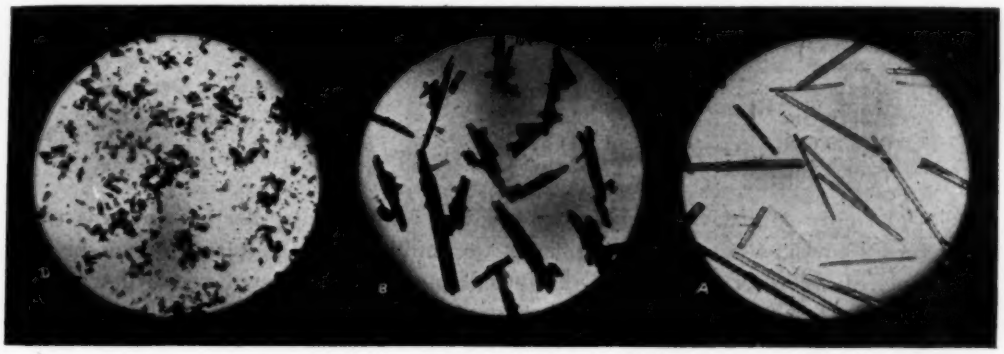

Fig. 1.—Crystallization from Acetic Anhydride.

Fig. 2.—Crystallization from Acetyl Chloride.

Fig. 3.—Recovered from Chloroform after attempted detn. of Iodine no.

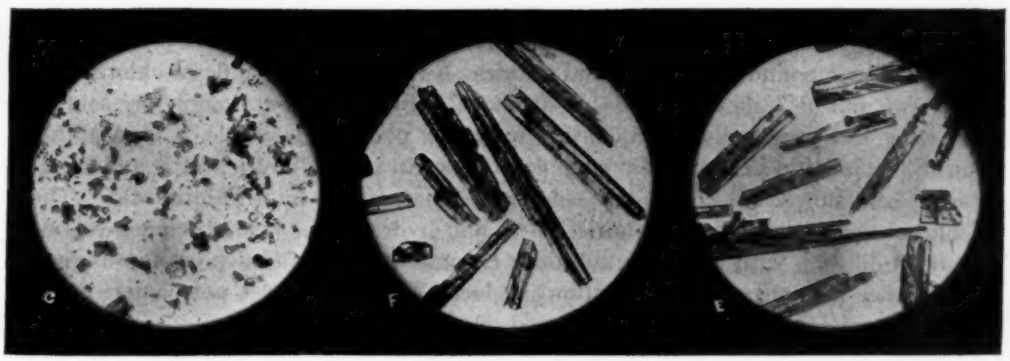

Fig. 4.—Crystallization from Concentrated Solutions.

Fig. 5.—Crystallization from Concentrated Solutions.

Fig. 6.—Crystallization from Dilute Solutions.

Further exposure was without effect. No depression of the melting point was observed and a single recrystallization from methyl or ethyl alcohol gave the original white substance. Artificial light had no effect on the color of the substance.

A small amount of the substance was dissolved in glacial acetic acid and bromine added in slight excess. An amorphous precipitate was obtained which became crystalline on standing. When dried on a porous plate the crystals melted at 155–156°, but when mixed with the original substance the melting point was lowered to 144–145°. Another portion dissolved in ether was brominated with a glacial acetic acid solution of bromine. No precipitate was formed, so after shaking with sodium sulfite to remove the excess bromine the ether was removed by distillation. Some solid material separated from the remaining acetic acid. This when crystallized twice from

methyl alcohol melted at 146–148°. When mixed with the original it melted at 149° with charring.

Qualitative analysis showed the presence only of carbon, hydrogen and oxygen. Analysis by combustion gave the following results:—

Sample.	CO_2.	H_2O.	% C.	% H.	% O (difference).
0.2045 Gm.	0.5518 Gm.	0.0752 Gm.	73.60	4.11	22.29
0.1514 Gm.	0.4092 Gm.	0.0520 Gm.	73.72	3.84	22.44
0.1582 Gm.	0.4252 Gm.	0.0568 Gm.	73.30	4.01	22.69
0.1601 Gm.	0.4328 Gm.	0.0538 Gm.	73.73	3.76	22.51

An attempt was made to determine the molecular weight of the compound by the cryoscopic method, using benzene as the solvent.

Solute.	Solvent.	p.p.	M. wt.
0.2947 Gm.	43.92 Gm.	0.100° C.	336
0.3859 Gm.	43.92 Gm.	0.133° C.	332
0.7835 Gm.	43.92 Gm.	0.324° C.	276
1.2963 Gm.	43.92 Gm.	0.500° C.	296

The only similarity to a phytosterol was found in its reaction towards the Hager-Salkowski reagent. As applied, 4 to 5 milligrams of material was dissolved in 3 cc. of chloroform and 2 cc. of concentrated sulphuric acid added down the side of the test-tube. At the contact zone between the acid and chloroform a yellow ring at once appeared. On standing there appeared below this in the acid successive rings of grass green, red, fuchsin and blue. With a phytosterol the color changes appear in the chloroform layer and the acid assumes a green fluorescence. The compound gave a negative reaction for phytosterol with Liebermann's reagent, acetic anhydride and concentrated sulphuric acid.

The compound is tasteless and odorless. It is readily soluble in chloroform, benzene and 95% methyl and ethyl alcohols. It is slowly but completely soluble in ether but practically insoluble in low boiling petroleum ether. It is insoluble in dilute mineral acids, readily soluble in concentrated sulphuric, nitric and acetic acids, and slowly but completely soluble in concentrated hydrochloric acid. The solution in concentrated sulphuric, nitric and hydrochloric acids becomes yellow, but on dilution with water the solutions become colorless and deposit the original substance unchanged. The solution in glacial acetic acid does not change color, and the original material is precipitated on the addition of water.

Hydrogenation of the Oil.—Both the crude and refined oils were hydrogenated with the aid of a nickel catalyst in a small apparatus devised for the purpose and shown in Figure 7. The catalyst was prepared by dissolving 50 grams of nickel sulphate, $NiSO_4.6H_2O$ in water, adding 30 grams of kieselguhr, 100 mesh, and then adding, with constant stirring, a solution containing 25 grams of sodium carbonate. The mixture of nickel carbonate and kieselguhr was filtered on a Buchner funnel and washed with water until the washings were free from sulphate and carbonate ions. It was then dried at 105° in a vacuum oven, powdered finely and preserved in a glass-stoppered bottle.

The nickel carbonate was reduced to the metal in the hydrogenating flask by placing 38 grams of material in the flask, heating the flask to 270°, admitting hydrogen at a pressure of 8–9 mm. above atmospheric and maintaining a temperature of 270–290° for six hours while keeping up the supply of hydrogen. The flask was cooled to room temperature while filled with hydrogen, 350 grams of oil added as rapidly as possible, the current of hydrogen admitted again and the oil constantly stirred. The temperature was brought to 185–195° as rapidly as possible and held at that point for five hours, then allowed to fall to 90° and the fat filtered through paper in a hot water jacketed funnel. The melted fat was practically colorless, having only the slight-

est yellow tint, and on cooling became perfectly white. The solidified fat was hard, brittle and odorless. Its melting point, by Twitchells (7) method, was 64.5°. The Iodine number, by Hanus' method, was 0.89. The crude oil, treated in a similar fashion for ten hours, gave a yellowish brown fat of lower melting point and having an iodine number of 32.2 (Hanus).

Examination of the Seed-cake.—Six hundred grams of the press cake as received was ground fine and percolated with 95% alcohol. Evaporation of the solvent left a thick syrupy liquid from which 10–12 grams of the bitter oil separated. The syrupy mass was first washed with petroleum ether, then with ether. These washings were combined and evaporated, leaving a bitter residue which on standing for four weeks deposited yellow granules. These upon crystallization from methyl alcohol melted at 157–159° and were found to be identical with the crystalline matter previously described.

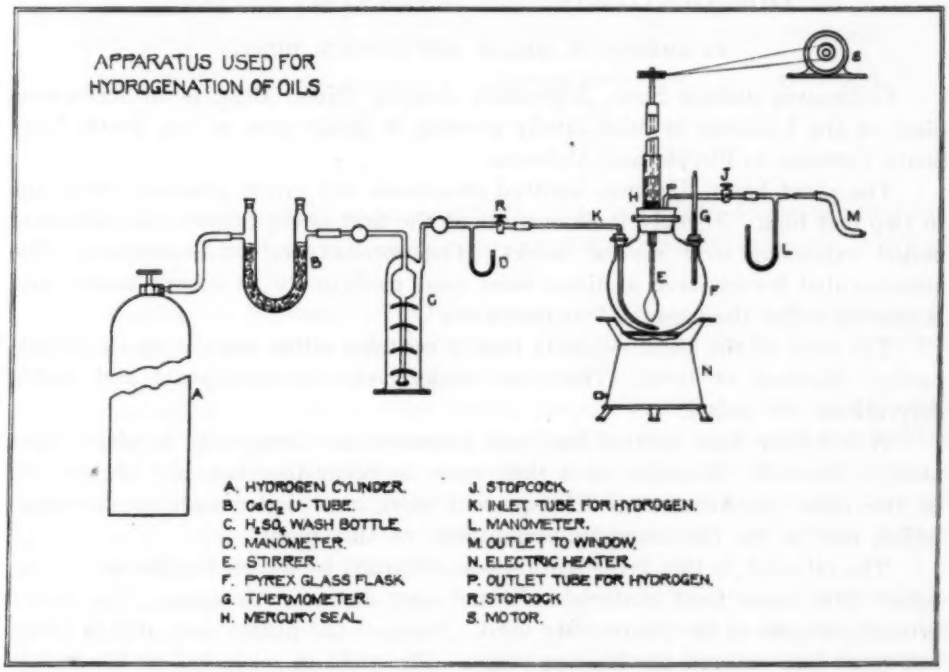

Fig. 7.—Set-up of Apparatus used in Hydrogenation.

SUMMARY.

The expressed oil from the seeds of Pongamia glabra has been examined and its chemical and physical constants determined.

A number of experiments for refining the oil are described by which the color, odor and taste are improved. None of these methods have been tested on a commercial scale.

The substance to which the oil owes its bitter taste is found in the unsaponifiable fraction. It is apparently dissolved from the seed by the oil.

The unsaponifiable matter also contains a crystalline substance, melting at 159°, which is apparently not a phytosterol. This crystalline substance is being more thoroughly investigated.

The refined oil was hydrogenated, using nickel as a catalyst. The product was hard, brittle, colorless and odorless.

A specific test for the Pongam oil has been suggested.

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THE VOLATILE OIL OF COLLINSONIA ANISATA.

BY EMERSON R. MILLER AND JAMES K. HUNT.

Collinsonia anisata Sims, *Micheliella Anisata* (Sims) Briq. is an herbaceous plant of the Labiatae or mint family growing in sandy pine or oak woods from South Carolina to Florida and Alabama.

The plant has a ligneous, knotted root-stock and grows generally from one to two feet high. Usually it blooms about the first of September, the flowering period extending over several weeks. The corollas are cream-colored. The anise-scented leaves have at times been used medicinally as a carminative and stomachic under the name of "citronella tea".

The odor of the plant suggests that it contains either anethol or its isomer, methyl chavicol, or both. These are respectively the *p*-propenyl and *p*-allyl derivatives of anisol.

It is known that anethol has been identified less frequently in plants than methyl chavicol. In some cases they seem to occur together, but always one or the other predominates. The present work was undertaken to determine which one is the characteristic constituent of this plant.

The oil used in this investigation was obtained by steam distillation in October 1909, from fresh material collected near Auburn, Alabama. The above-ground portions of the plants were used. Some of the plants were still in bloom but most had entered the fruiting stage. The yield of oil based on the weight of fresh green plant material was 0.138%. No doubt the yield would have been larger if the plants had been collected and distilled a few weeks earlier.

PHYSICAL CONSTANTS OF THE OIL.

Three samples of oil were obtained, the total volume being about 170 cubic centimeters. The optical activity of one of these was determined soon after distillation. The rotation in a 100-mm. tube was —2.34° at 21° C. The rotation of all three samples determined in 1914 was —0.4°, —2.3°, —1.65°, respectively, in a 100-mm. tube. Since the rotation of sample No. 2 was —2.34°, determined soon after the oil was distilled, it will be seen that practically no change in rotation had occurred by standing five years.

The index of refraction as determined in 1914 by means of an Abbé refractometer was 1.5225, 1.5185, 1.5195, respectively, at 19.2° C.

CHEMICAL EXAMINATION.

Test for Phenol.—When shaken with 5% sodium hydroxide solution in a

cassia flask the oil showed practically no diminution in volume, indicating the absence of phenols. However, when the total amount of the oil was treated in the usual way for the removal of phenol evidence of the presence of a small amount of salicylic acid was obtained.

Test for Aldehyde.—With Schiff's reagent the oil immediately gave a pink color, indicating the probable presence of aldehyde.

Test for Ketone.—Mulliken's test indicated the presence of ketone. By heating the oil with a 40% solution of sodium sulphite there was shown a diminution in volume corresponding to 6% of ketone. Owing to the small amount of oil available it was not possible to identify either aldehyde or ketone.

Tests for Free Acid and Ester.—The following values were obtained:

Sample.	Acid number.	Saponification number.	Ester number.
1	3.40	21.20	17.80
2	0.48	4.37	3.89
3	0.43	9.13	8.70

The high values obtained for sample No. 1 are no doubt due to the fact that this sample was kept several years in a partly filled bottle and had undergone resinification.

Estimation of Methoxyl.—The percentage of methoxyl was determined by Perkin's modification of the Zeisel method. The following values were obtained: 16.6, 17.4, 17.1% OCH_3 respectively for the three samples.

Identification of Methoxyl.—By boiling the oil with concentrated hydriodic acid (specific gravity 1.7) and passing the gas thus liberated into an alcoholic solution of dimethyl aniline there was obtained a white crystalline solid which, after purification, melted at 212–214° C. This is known to be the melting point of trimethyl phenyl ammonium iodide. Hence the alkoxy compound present in the oil contained the methoxyl group.

Saponification of the Oil.—Preparatory to saponification the three samples of oil were now mixed and shaken with 40% solution of sodium bisulfite, in order to remove aldehyde, washed, shaken with 5% solution of potassium hydroxide in order to remove acid and phenol and again washed. It was now heated on a boiling water-bath with 0.5N alcoholic potassium hydroxide solution under a reflux condenser for thirty minutes and the greater part of the alcohol distilled off on the water-bath.

Fractionation of the Oil.—The alkaline mixture remaining in the flask after distilling off most of the alcohol was washed with water until free from alkali, dried by means of anhydrous sodium sulphate and fractionated, first under diminished pressure, then three times under atmospheric pressure. Fractions were obtained as follows:

No. of fraction.	Volume.	Boiling point.	Optical activity.	Index of refraction.	Specific gravity.
1	6 cc.	150–200° C.			
2	8 cc.	200–208° C.			
3	40 cc.	208-211° C.	inactive	1.522	
4	70 cc.	211–215° C.	inactive	1.521	0.972
5	4 cc.	215–220° C.			
	Residue				

Identification of Methyl Chavicol.—The odor of most of these fractions suggested methyl chavicol or anethol and at the same time safrol. No. 4, the largest fraction, agrees fairly well with methyl chavicol in boiling point, specific gravity, and index of refraction as shown by the following comparison:

	Index of refraction.	Specific gravity.	Boiling point.
Fraction No. 4	1.521	$0.972\ \frac{26°}{26}$	211–215° uncor.
Methyl chavicol	1.5238 1.5244	0.9714 $0.9720\ 15°$	215–216° cor.

This sample also agreed with methyl chavicol in that it did not possess the intensely sweet taste characteristic of anethol.

In order to obtain further evidence of the presence of methyl chavicol, a portion of fraction No. 4 was oxidized by means of potassium permanganate according to the method of Bertram and Walbaum.[1] There was thus obtained an acid having the melting point 173° C. In another experiment in which a mixture from fractions Nos. 3 and 4 was used there was obtained an acid which melted at 183° C.

Depending upon conditions methyl chavicol may yield either homoanisic acid, m. p. 84° C. or anisic acid, m. p. 184.2° C., while anethol yields only the latter acid. The results of these oxidation experiments show that the methoxy compound contained in the oil is either methyl chavicol or anethol or both. The physical properties of the oil, however, agree more closely with those of methyl chavicol.

The results obtained in the quantitative estimation of the methoxy group show that the oil contains about 80% by weight of methyl chavicol.

Probable Presence of Safrol.—In one of these oxidation experiments the odor of piperonal was distinctly noticeable. Since the odor of some fractions of the oil suggested the presence of safrol, which may give piperonal as one of its oxidation products, it is quite probable that safrol is a constituent of the oil.

Presence of Terpene.—When the alcohol recovered by distillation from the saponification mixture was diluted with water an oil separated, which possessed terpene characteristics, but the amount of material obtained was not sufficient for further identification.

SUMMARY.

Collinsonia anisata Sims in late flowering stage yielded about 0.14% of a volatile oil about 80% of which is methyl chavicol. Other constituents are salicylic acid and unidentified terpene, aldehyde, ketone and ester. Safrol, also, is probably a constituent.

INAUGURAL DISSERTATION.

Further Investigations Relating to the Constituents of Rhubarb.—Presented as part of the requirement for the Doctor's degree at the University of Basel, by Hans Göldlin von Tiefenan. The candidate expresses thanks to members of the Faculty of Pharmacy—Prof. Dr. H. Zörnig and Dr. P. Casparis.

The report covers 62 pages and concludes with a summary and conclusions, and references to other investigations. A sketch of the candidate for the degree is included.

[1] Archiv der Pharmacie 235, 179–182 (1897).

AUTOMATIC DEVICES FOR EXTRACTING ALKALOIDAL SOLUTIONS.*

II. APPLICATION TO NUX VOMICA AND BELLADONNA ALKALOIDS.

BY HOWARD R. WATKINS AND SAMUEL PALKIN.

In a previous paper[1] several automatic devices were described and their use for the extraction of alkaloidal solutions was discussed. In order to determine the optimum conditions for automatic extraction and the relative efficiency of extractors of the various types with different solvents, a detailed study was undertaken of the factors governing the use of these devices for the ordinary preparations of alkaloidal drugs. The data on nux vomica and belladonna alkaloids are given in the following pages.

It would be reasonable to suppose that the behavior with respect to solubility of alkaloids extracted at an elevated temperature (boiling point of the solvent) would differ from that of alkaloids extracted with the handshaken funnel in the cold. This difference in behavior was found to be particularly striking in the case of morphine.[2] Chloroform, although in the cold an exceedingly poor solvent for this alkaloid, becomes an excellent medium for extracting it from aqueous solutions when the automatic extractor is used.

Unless otherwise indicated, the alkaloid solutions used in this study were prepared from commercial fluidextracts by "evaporating the acidified preparation to low volume and then rediluting with water."[3] This was done in order to insure an extracted alkaloidal residue sufficiently clean to be titratable and solution of as uniform a type as possible to serve as a starting point for the experiments. It was not found practicable to prepare one large quantity of nux vomica and one of belladonna to be used for all the experiments. Smaller units uniformly prepared from various commercial fluidextracts and tinctures constitute alkaloidal solutions A, B, BX, C, D, and E. When assayed by the U. S. P. Method and Modified U. S. P. Method,[3] these solutions gave the following results:

Solution	Alkaloid per 20 cc. U. S. P. method, Grams.	Modified U. S. P. method, Grams.
Nux Vomica:		
A	.....	0.2648
	.....	0.2722
B	.....	0.2417
BX	0.2402	0.236
Belladonna:		
C	0.0457	0.05031
D	0.0445	0.05020
E	0.0492	0.04454

The following factors were studied in the light of their effect on the efficiency and completeness of extraction: Variation in the ammonia concentration; variation in the solvent used; variation in the alkaloidal concentration; presence of

* Contribution from the Drug Control Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.

[1] *Ind. Eng. Chem.*, 16, 612 (1925).

[2] *Ind. Eng. Chem.*, 16, 612 (1925), Table II.

[3] Jour. A. Ph. A., 13, 694 (1924).

ammonium sulphate; stability of the alkaloids under the conditions of extraction and variation in the type of extracting device. While the effect of a given variable was being studied all other conditions were kept as nearly constant as possible. In practically all the experiments the alkaloids were extracted for definite periods of time.

NUX VOMICA ALKALOIDS.

As was shown previously, the concentration of ammonia materially affects the speed of extraction of strychnos alkaloids, owing to their amphoteric behavior. The results of a series of experiments conducted to determine the effect of ammonia under conditions of automatic extraction (Table I, Experiments 1 to 11) fail to show a similar effect. Variation in ammonia concentration from the point just sufficient to liberate the alkaloid (approximately 2 cc. to 3 cc. of 5*N* ammonium hydroxide) made no appreciable difference in the speed of extraction or in the quantity of total alkaloids extracted.

The results of the experiments given in Table I show that under favorable conditions 95 per cent or more of the alkaloid is extracted during the first 30 minutes. As might be expected, the speed of extraction and completeness of recovery are independent of the concentration of the alkaloid in solution (Table I, Experiments 12 to 16).

Prolonged extraction at an elevated temperature is open to the criticism that ammonium sulphate may be carried over to the flask containing the alkaloid concentrate. In that event interaction between the alkaloid and the ammonium sulfate would, in effect, partially neutralize the alkaloid and cause a low titration. In order to determine this question a comparatively large excess of ammonium sulphate (0.5 gram) was added to each of the aliquots of alkaloidal solutions in Experiments 17 to 20 (Table I). This had no appreciable effect on the accuracy of the determinations.

The relative effectiveness of the more complicated forms of extractors[1] (vapor-type) is shown by the results in Table I, Experiments 21 to 26.

BELLADONNA ALKALOIDS.

The reputed instability of the belladonna alkaloids made it necessary to determine their tolerance to heat-acid treatment, incident to the process of dealcoholization[2] and partial purification of their galenical preparations, and to prolonged extraction with the various solvents at the boiling point when in contact with ammonia—conditions prevailing in continuous extraction. For this purpose known quantities of atropine and belladonna preparations of known assay were subjected to treatments and extractions under conditions that would be met in the method for belladonna preparations as described, a wider range being used for each variable than that prescribed in the method.

Atropine.—Solutions containing known quantities of atropine sulphate in 30 cc. volume were evaporated on the steam-bath with varying quantities of acid to a volume of about 10 cc. and the resulting concentrates were made alkaline and extracted in a continuous extractor for 2 hours, using chloroform. These condi-

[1] *Ind. Eng. Chem.*, 16, 612 (1925), Apparatus III and IV.

[2] *Ind. Eng. Chem.*, 16, 612 (1925), Table II.

TABLE I.—EXTRACTION EFFICIENCY OF AUTOMATIC DEVICES (NUX VOMICA ALKALOIDS).

Variant.	Exp. no.	Alkaloid used cc.	Solvent used.	Ammonia used N/2 cc.	Ammonia used 5/N cc.	Alkaloid extracted. 1st interval Gm.	1st interval %	2nd interval Gm.	2nd interval %	3rd interval Gm.	3rd interval %	4th interval Gm.	4th interval %	Total Gm.	Total %
		Sol. A				20 min.		40 min.		40 min.		40 min.			
Ammonia concentration	1	10	$CHCl_3$	2	–	0.1245	93.61	0.0036	2.70	0.0015	1.0	0.0007	0.5	0.1303	97.97
	2	10	$CHCl_3$	7	–	0.1274	95.80	0.0051	3.84	0.0015	1.0	0.0004	0.3	0.1344	101.05
	3	10	$CHCl_3$	2	2	0.1274	95.80	0.0049	3.30	0.0007	0.5	0.0004	0.3	0.1329	99.92
						30 min.		60 min.		60 min.					
	4	10	C_6H_6	2	–	0.1289	96.92	0.0022	1.65	0.0004	0.30			0.1315	98.87
	5	10	C_6H_6	7	–	0.1289	96.92	0.0025	1.88	0.0007	0.52			0.1321	99.32
	6	10	C_6H_6	2	2	0.1296	97.44	0.0015	1.12	none	—			0.1311	98.57
		Sol. B				30 min.		60 min.							
	7	20	$CHCl_3$	7.2	–	0.2205	89.63	0.0276	11.22					0.2481	100.85
	8	20	$CHCl_3$	7.2	2	0.2031	82.56	0.0422	17.15					0.2453	99.71
						30 min.		60 min.							
	9	20	C_6H_6	7.2	2.8	0.2446	99.43	0.0011	.45					0.2457	99.88
	10	20	C_6H_6	—	3.0	0.2169	88.17	0.0291	11.83					0.2460	100.00
	11	20	C_6H_6	—	–	0.2388	97.07	0.0109	4.43					0.2497	101.50
						30 min.		60 min.							
Alkaloidal concentration[1]	12	5	C_6H_6		2	0.0604	98.21	———	—					0.0604	98.21
	13	10	C_6H_6		2	0.1150	93.49	0.0073	5.94					0.1223	99.43
	14	10	C_6H_6		2	0.1186	96.43	0.0051	4.14					0.2439	99.14
	15	20	C_6H_6		4	0.2417	98.25	0.0022	0.89					0.2424	98.53
	16	20	C_6H_6		2	0.2344	95.28	0.0080	3.25						
						30 min.		60 min.							
Ammonium sulphate excess	17	20	$CHCl_3$	7.2	2	0.1922	78.13	0.0517	21.01					0.2439	99.14
	18	20	$CHCl_3$	7.2	2	0.1966	79.92	0.0473	19.22					0.2439	99.14
						30 min.		60 min.							
	19	20	C_6H_6	7.2	2	0.2468	100.03	0.0029	1.18					0.2497	101.51
	20	20	C_6H_6	7.2	2	0.2468	100.03	0.0022	0.89					0.2490	101.22
Type of extracting device															
Solvent heavier than water		Sol. A				10 min.									
Apparatus 4[2] with thimble	21	10	$CHCl_3$	7.0	–	0.1245	93.61								
Apparatus 4[2] without thimble	22	10	$CHCl_3$	7.0	–	0.0917	68.95								
		Sol. BX													
Apparatus 4[2] with thimble	23	20	$CHCl_3$	7.0	–	0.2395	101.48								
Apparatus 4[2] without thimble	24	20	$CHCl_3$	7.0	–	0.1680	71.19								
		Sol. B				20 min.									
Solvent lighter than water (Apparatus 3[2])	25	20	C_6H_6	2.0		0.2470	100.6								
	26	10	C_6H_6	2.0		0.1241	100.8								

[1] Nos. 12 to 16 diluted with water to 20 cc. volume.

[2] *Ind. Eng. Chem.*, 16, 612 (1925).

tions parallel the normal procedure for the extraction of belladonna preparations by means of the continuous extractor.

TABLE II—EFFICIENCY OF AUTOMATIC DEVICES (ATROPINE).

Variant.	Expt. no.	Alkaloid used mg.	H_2SO_4 cc.	$5N$ NH_4OH cc.	Period of heating min.	Solvent used.	Alkaloid Extracted mg.
Heat acid treatment	1	41.0	10 cc. 0.1N		40	$CHCl_3$	41.2
	2	41.0	3 cc. N		30	$CHCl_3$	41.2
	3	41.0	10 cc. N		50	$CHCl_3$	41.2
	4	29.7	10 cc. 0.1N		35	$CHCl_3$	29.0
	5	29.7	3 cc. N		20	$CHCl_3$	29.3
	6	29.7	10 cc. N		25	$CHCl_3$	28.5
Ammonia	7	48.6		2	120	$(C_2H_5)_2O$	45.6
	8	48.6		2	120	$CHCl_3$	48.3
	9	48.6		2	120	C_6H_6	49.2

TABLE III—EXTRACTION EFFICIENCY OF AUTOMATIC DEVICES.

(Belladonna Alkaloids.)

Variant.	No.	Alkaloid used[1] Solution.	Solvent used.	Ammonia used $N/2$ cc.	Ammonia used $5N$ cc.	1st interval mg.	2nd interval mg.		Total mg.
Extraction period	1	C	$CHCl_3$		3			2 hr.	50.9
	2	C	$CHCl_3$		3				50.9
	3	C	C_6H_6		3				51.5
	4	C	C_6H_6		3				50.3
	5	C	$CHCl_3$		3			$6^2/_3$ hr.	50.3
	6	C	$CHCl_3$		3				50.9
	7	C	C_6H_6		3				51.5
	8	C	C_6H_6		3				51.5
	9	C	C_6H_6		2	46.9	2.3		49.2
	10	C	C_6H_6		2	46.9	2.3		49.2
	11	C	C_6H_6		2	44.5	4.5	60 min.	49.0
	12	C	C_6H_6		2	45.1	4.6		49.7
	13	C	$CHCl_3$		2	44.0	6.8		50.8
	14	C	$CHCl_3$		2	45.1	4.5		50.1
	15	D	C_6H_6		2	53.8	1.2	30 min.	55.0
	16	D	$CHCl_3$		2	56.1	1.7		57.8
	17	D	C_6H_6		2	51.5	3.5	60 min.	55.0
	18	D	$CHCl_3$		2	55.5	1.7		57.2
Ammonia concentration	19	E	C_6H_6	5.5				2 hr.	45.1
	20	E	C_6H_6	5.5					45.7
	21	E	C_6H_6	5.5					45.7
	22	E	C_6H_6	10					47.5
	23	E	C_6H_6	10					46.9
	24	E	C_6H_6		2				49.2
	25	E	C_6H_6		4				49.2
	26	D	C_6H_6	5.5				30 min.	43.4
	27	D	C_6H_6	10					49.7
	28	D	C_6H_6		2				53.2
	29	D	$CHCl_3$	5.5					50.9
	30	D	$CHCl_3$	10					53.8
	31	D	$CHCl_3$		2				55.5

[1] 20 cc. of each solution was used.

In order to determine the stability of atropine toward ammonia, several experiments were made in which weighed quantities of atropine (representing 48.63

mgm. of the pure alkaloid) were dissolved in ether, in chloroform, and in benzene 2 cc. of 5*N* ammonia was added to each and the solutions were refluxed for 2 hours, after which they were extracted in the usual way.

As is obvious from the data in Table II, no destructive action, or at least no change in titration value, of the alkaloids occurred, either by evaporation of the solutions in the presence of acid or by hot extraction in the presence of excess ammonia, except in Experiment 1, where with ether in the presence of ammonia a measurable loss occurred. Additional experiments with the same three solvents were used for extraction. Where no acid treatment had been made and the ammonia concentration (2 cc. of 5*N* ammonium hydroxide) was the same for all, complete recovery of the atropine was easily effected with either chloroform or benzene. Consistent with previous observations, a slight loss with ether ensued.

Total or Combined Alkaloids of Belladonna.—Experiments with solutions of belladonna alkaloids (prepared from belladonna root fluidextract) showed (Table III) that complete extraction of the alkaloids can be effected by using either chloroform or benzene as the solvent. Even with prolonged extraction ($6^2/_3$ hours in Experiments 5 to 8), there was no evidence of destruction or loss, so far as is indicated by titration. Experiments were made to determine the effect of varying ammonia concentration on the accuracy of assay or completeness of extraction (Experiments 19 to 25) and on the relative speed of extraction (Experiments 26 to 31, Table III). A slightly more rapid extraction of alkaloids is obtained with higher concentrations of ammonia (Experiments 26 to 31). Under optimum conditions nearly all the alkaloid is extracted within 30 minutes. This fact is brought out more conclusively in the results of Experiments 9 to 18 (Table III), in which the effect of time variations was studied while other conditions were constant.

A series of experiments was conducted to determine the completeness of automatic continuous extraction for belladonna alkaloidal preparations as compared with that of the hand-shaken separatory funnel extraction. When extracted with benzene for 2 hours, using the automatic device, 20 cc. of the solution (E) yielded 47.43 mgm. of alkaloid. After titration the resulting solution of the alkaloids was re-extracted by hand, using the separatory funnel with chloroform until a negative test with Mayer's reagent indicated completeness of extraction. Only 45.7 mgm. of alkaloid was obtained. A second 20 cc. aliquot of the same belladonna preparation when extracted by means of the hand-shaken separatory funnel yielded 44.54 mgm. of alkaloids. The residual aqueous layer, from which no more alkaloid could be extracted by hand, as evidenced by negative tests with Mayer's reagent, was then subjected to continuous extraction in the automatic device for 2 hours in the usual way. A yield of 3.18 mgm. of alkaloid was obtained. Physiological tests showed that this additional alkaloid was mydriatic.

SUMMARY.

A detailed study was made of the application of automatic devices to liquid preparations of nux vomica and belladonna. The results of the experiments showed that under conditions of dealcoholization and subsequent prolonged hot extraction, no ammonium sulphate is carried over to the alkaloid concentrate; that almost all of the alkaloid is extracted in the first 30 minutes; that, even with a decided variation in the conditions of experiment, the quantity of titratable alka-

loids extracted is not affected; that, in the case of belladonna, at least, a slightly greater quantity of alkaloid can be extracted by means of the automatic devices than by means of a separatory funnel and that in view of the high efficiency already obtainable with the simple types (reported for nux vomica and belladonna), there would appear to be no practical advantage in using the more complicated apparatus for extracting nux vomica and belladonna alkaloids.

THE COMPOSITION OF THE BISMUTH SALT IN GLYCERITE OF BISMUTH.

BY C. C. GLOVER AND THEODORE F. THORSBERG. (1)

An attempt has here been made to determine the chemical composition of the bismuth salt in solution in the glycerite of bismuth of the "National Formulary IV." In the examination of the literature for previous work done on the subject of bismuth salts and chiefly that of bismuth tartrate, we found that a great deal of work had been done, but that few definite results had been recorded. Dr. Ruddiman in his "Whys in Pharmacy" gives the following chemical equation for the reaction taking place when the preparation is made up.

$$BiONO_3 + 2HNO_3 \longrightarrow Bi(NO_3)_3 + H_2O$$
$$2Bi(NO_3)_3 + 3H_2C_4H_4O_6 + 6NaHCO_3 \longrightarrow$$
$$Bi_2(C_4H_4O_6)_3 + 6NaCO_2 + 6CO_2 + 6H_2O$$

The first one to write about a bismuth tartrate was Schwarzenberg, (2) who obtained a white crystalline substance from Bi_2O_3 by digesting $Bi(NO_3)_3$ with $NaC_2H_3O_2$ and $KHC_4H_4O_6$. By this manipulation the bismuth went into solution. He concentrated the filtrate on the water-bath and obtained a white crystalline powder which he spoke of as bismuth potassium tartrate, giving it the formula $C_4H_4O_6KBiO$. R. Schneider (3) made a hot mixture of a moderately concentrated solution of five parts Bi_2O_3 in nitric acid with a concentrated solution of four parts $KHC_4H_4O_6$ in water. On cooling, small crystals formed which he gave the formula $Bi_2(C_4H_4O_6)_3.6H_2O$, which he called a neutral bismuth tartrate. Later, Baudran (8) prepared salts of tartaric acid and a potassium salt with bismuth from freshly prepared $Bi(OH)_3$, which was prepared by treating a bismuth solution with alkali at ordinary temperature. He added to this, tartaric acid and obtained a bismuth tartrate which he gave the formula $BiOC_4H_5O_6.H_2O$. This precipitate was soluble in two hundred twenty eight parts of water. It was in the form of small needles and was decomposed by alkalies. If the alkaline solution is treated with a large amount of potash lye, the bismuth potassium tartrate will crystallize out. He gave it the formula $K(BiO)C_4H_4O_6.H_2O$.

Later, A. Rosenheim and W. Vogelsang (9) worked on the bismuth and alkali bismuth tartrate, since those previously engaged in the work had not come to any definite results. In order to make a nitric acid free bismuth tartrate, the Schneider salt was added in small portions to a boiling concentrated solution of tartaric acid. When the salt had all gone into solution, upon cooling, a nitric acid free bismuth tartrate was formed in beautiful, glazy, crystals. The crystals dissolved in alkali, giving a clear solution, and produced a basic salt when added to water. Its formula was given as $Bi(C_4H_4O_6)C_4H_5O_6.2H_2O$. Rosenheim and Vogelsang could not

produce the substance that Schwarzenberg and Baudran had written about. They could not produce the sodium compound of bismuth tartrate in crystalline form.

H. Telle (7) prepared a bismuth tartrate by Baudran's method by treating twenty parts of freshly prepared bismuth hydroxide with a concentrated solution of twenty of tartaric acid. Small needle-like crystals formed, which were washed with alcohol. The substance was scarcely soluble in water. Since Baudran salt was soluble in two hundred twenty-eight parts of water, Telle made the statement that he had a different salt than Baudran had written about. The percentage of bismuth in this salt according to the results of analysis was 41.75.

We first prepared a glycerite of bismuth, following closely the directions given in the N. F. IV, and a number of analyses were made on it, determining both the bismuth, tartrate and sodium. The procedure followed for the analysis was as follows: (6) A sample of the glycerite was made up and a couple of drops of HCl were added, and the whole diluted with water. Then a rapid stream of H_2S was passed in until all the bismuth was precipitated as Bi_2S_3. This was filtered and the precipitate washed and dissolved in fifty per cent nitric acid. The excess nitric acid was neutralized with dilute ammonia, and then the bismuth precipitated with ammonium carbonate T. S. An excess should be avoided, as the precipitate is soluble in the reagent. The whole was heated on the steam-bath for an hour, then filtered, and the precipitate dried. The filter paper was charred, and ignited apart from the rest, and when ignited, a few drops of nitric acid were added, and the whole cautiously evaporated. Then the rest of the precipitate was added, and the whole ignited at a dull red heat to a constant weight. This was weighed as Bi_2O_3. The filtrate from the H_2S precipitate was evaporated to dryness on the steam-bath, then taken up with ten cc. water, and an excess of potassium carbonate added. The excess potassium carbonate was neutralized with glacial acetic acid, and five cc. more added in order to form potassium bitartrate. This was precipitated by adding fifty cc. of ninety-five per cent alcohol, stirring vigorously during the addition. After standing for ten to twelve hours, it was then filtered and the precipitate washed free from acetic acid, with ninety-five per cent alcohol. The precipitate was dissolved in boiling water and titrated while hot with $N/10$ KOH, using phenolphthalein as indicator.

The method for determining sodium in the solution is as follows: Precipitate the bismuth from a sample as Bi_2S_3, and filter off the precipitate and wash. Evaporate the filtrate to a small bulk, transfer to a tared crucible, and evaporate to dryness; then add one-half cc. concentrated H_2SO_4 and cautiously evaporate. Ignite and weigh the residue as Na_2SO_4. From this weight calculate the percentage of sodium. The results of the analysis on the glycerite were as follows: Percentage of bismuth found was 8.11, percentage of tartrate was 14.66, ratio of bismuth to tartrate is 1 to 1.75. The free acid in the glycerite was determined and calculated as tartaric acid. This gave 3.84 per cent. The results of this analysis indicate the salt in solution is not a normal bismuth tartrate, as in that case, the ratio of bismuth to tartrate would be as 2 is to 3. In the preparation of glycerite of bismuth, a bismuth salt is formed as a magma, and at this point the magma is dried and the percentage of bismuth and tartrate determined. The analysis gave 56.27 per cent bismuth, and 41.57 per cent tartrate. Again not a simple ratio. When the glycerite was evaporated to dryness on the steam-bath, the residue

appeared as a varnish-like mass. Upon powdering, a sandy-like powder was obtained, and the bismuth and tartrate determined. The method for determining bismuth in this case differed from the previous method. The residue was weighed out, then charred at a low heat, and then ignited at the full heat of the Bunsen burner. The residue was weighed as Bi_2O_3. The percentage of bismuth found was 52.28 and the percentage tartrate was 40.79. When a sample of 20 cc. of the glycerite was taken and an equal volume of ninety per cent alcohol added, a white precipitate was thrown out. Upon stirring the contents, a heavy plastic mass was formed and also a fine crystalline precipitate in suspension. The two were separated and dried. Each showed a crystalline structure when put under the microscope. The analysis of the plastic mass formed by the alcoholic precipitation showed it to contain 27.05 per cent tartrate and 53.62 per cent bismuth. Analysis of the crystalline suspension showed it to contain 83.29 per cent of tartrate and 17.47 per cent of bismuth. The precipitates formed were readily soluble in cold and hot water. A solution of these precipitates in distilled water was neutral to methyl orange.

When the glycerite was diluted with a volume of water and this added to alcohol so that the percentage of alcohol at the end was 50 per cent, a precipitate formed which was different in appearance from the precipitate obtained with the concentrated alcohol. The precipitate was not so crystalline and did not settle nor filter readily. When it was dried at 65 degrees it first formed a syrupy liquid and upon further drying, became a transparent mass. When powdered, it became a white, granular powder. It was slightly soluble in cold water, readily soluble in hot water and was neutral to methyl orange. It contained 24.66 per cent tartrate and 49.59 per cent bismuth. When some of the precipitate formed by the precipitation in fifty per cent alcohol was spread on a glass plate and dried in a desiccator, it first formed a transparent layer and on further drying, formed thin, white scales which could easily be powdered. It was slowly soluble in cold water, readily soluble in warm water and neutral to methyl orange. It contained 50.31 per cent bismuth, and 25.12 per cent tartrate.

From these analyses we have drawn the conclusion that when a sample of glycerite is precipitated with alcohol in various concentrations above fifty per cent, the percentage of bismuth remains fairly constant, but the percentage of tartrate varies, depending on the concentration of the precipitating agent. The tartrate percentage decreases with the decrease in the percentage of alcohol as the precipitating reagent. It would seem then, that if we used still more dilute solutions we would reach a certain concentration where the precipitate thrown down would be only that of the normal bismuth salt. Analyses seem to indicate that in higher concentrations of alcohol, the precipitates formed consist of a definite bismuth tartrate with tartrate carried down in loose combination with the bismuth salt or carried down as some other tartrate. On this supposition, we then precipitated out salt from the glycerite of bismuth using concentrations of alcohol varying from absolute to twenty per cent. The method of precipitation in each case was the same.

The results of these determinations using different concentrations of alcohol are tabulated as follows:

% Alcohol.	Nature of precipitate.	Bismuth.	Tartrate.	Ratio.
99	white crystalline mass	45.67	48.99	1–1.12
95	white crystalline mass	46.07	54.56	1–1.19
75	semi-crystalline mass	51.21	47.46	1– .925
50	gray magma	54.45	43.51	1– .8
40	gray magma	55.82	39.98	1– .715
30	light magma	56.49	39.66	1– .705
25	light magma	56.26	38.56	1– .71
20	no precipitate, only cloudy			

It will be seen from the results of the foregoing analyses that the ratio of bismuth to tartrate is in no case a simple ratio, so that under the conditions of our investigations, no simple bismuth tartrate was formed. If we examine a number of possible bismuth tartrates and oxytartrates, and from their composition, calculate the ratio of bismuth to tartrate, we are led to conclude that what we have is not a simple salt, but a mixture of tartrates, and oxytartrates. The ratio of bismuth to tartrate in the normal bismuth tartrate is as 2 is to 3, as is seen from the formula, $Bi_2(C_4H_4O_6)_3$. There are two possible oxytartrates of bismuth. One $Bi_2O(C_4H_4O_6)_2$, where the ratio of bismuth to tartrate is 1 to 1. The other, possible tartrate would have a formula $Bi_2O_2(C_4H_4O_6)$, where the ratio of bismuth to tartrate is 1 to 0.500. If we examined the ratios of bismuth to tartrate as found in our analyses, we would see that they vary from 1 to 1.12, and 1 to 0.70, and that these ratios lie within the limits of the ratios of 1 to 1.5 and 1 to 0.5, so that our precipitates would consist of not a simple compound, but a mixture of one or more of the tartrates and oxytartrates. It will be noticed that the total percentage of bismuth and tartrate decreases from one hundred per cent to ninety-five per cent as we decrease the alcoholic strength from one hundred to twenty-five per cent. We must conclude then, that as we increase the dilution, we increase the amount of the two oxytartrates which would lower the total percentage of bismuth and tartrate present. We made a number of sodium determinations on these samples and in each case, the percentage was too low to justify our considering a sodium salt as present.

We tried a number of methods for the estimation of tartrate and the one that gave the best results was that of A. C. Chapman and Percy Whitteridge. (4) The method which they have developed and which we found to give accurate results as well as a great time saver over the bi-tartrate method is as follows: They have found that tartaric acid and tartrates may be completely precipitated from solution by a bismuth salt. The bismuth salt is insoluble in dilute acetic acid, and may be readily oxidized by $KMnO_4$. According to Peau de St. Giles, (5) the oxidation of tartaric acid by $KMnO_4$ in the presence of a mineral acid is as follows:

$$C_4H_6O_6 + O_2 \longrightarrow 2HCO_3 + 2CO_2 + H_2O$$

and the changes during oxidation of the bismuth salt are apparently similar. For the estimation of tartaric acid and tartrates by this method, four reagents of definite strength are required. The bismuth reagent is made by dissolving thirty grams of $Bi(NO_3)_3$ in twenty cc. glacial acetic acid, and diluting to three hundred cc. with water. If a precipitate forms after dilution, it should be removed by filtration before use. The other solutions necessary are as follows: H_2SO_4—10 per cent by volume; $KMnO_4$—1 per cent solution of the pure salt; $H_2C_2O_4$, (oxalic

acid), 19.9 grams of pure salt per litre. The procedure of the method is as follows: Weigh out a sample which contains about one-tenth of a gram of tartaric acid and precipitate with the bismuth reagent, adding excess. Filter and wash the precipitate and dissolve in 50 cc. of the hot H_2SO_4, then run in the $KMnO_4$ solution until an excess of not over five-tenths of a cc. is added. Then titrate back with the oxalic acid solution. It has been found by trial on various tartrates that fourteen cc. of the $KMnO_4$ solution is equivalent to one-tenth of a gram of tartaric acid. The bismuth precipitate is very soluble in nitric acid, so it is very essential to see that there is no nitric acid present. For our work, the substance under consideration was in the form of a bismuth salt of tartaric acid, so that it was unnecessary to prepare the bismuth reagent or use it in the procedure. We weighed out a sample of the bismuth salt and then dissolved it directly in the hot H_2SO_4 and then titrated as previously stated. Upon working with known solutions, we found that 14 cc. of our $KMnO_4$ was equivalent to one-tenth of a gram of tartaric acid. The authors of the article have stated that since the percentage of bismuth in the precipitates vary, it would probably not be possible to make the process directly volumetric.

SUMMARY.

The interpretation of a large number of analyses leads to the conclusion that the salt present in the glycerite of bismuth N. F. IV is not a simple tartrate but a mixture of tartrate and oxytrates.

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SOME EFFECTS RESULTING FROM EATING VELVET BEANS.

BY EMERSON R. MILLER, O. N. MASSENGALE AND M. A. BARNES.

The velvet bean can be traced back as far as about 1875 in Florida. Its origin, however, is not definitely known.

At first it was used only as an ornamental vine, but later was cultivated as a soil improver and a forage crop, the acreage gradually increasing until about 1917 when approximately five million acres were in cultivation in the Southeastern Atlantic and Gulf States. Since then the acreage has decreased to less than three million acres.

As the velvet bean is a member of the legume family, it was reasonable to suppose it might be used as food for man. It is reported that at the Florida Agricultural Experiment Station several persons ate small quantities of cooked velvet beans with the result that in some cases vomiting was caused, while in others both vomiting and purging occurred.

In order to have first-hand knowledge in this matter we have, ourselves, eaten small amounts of cooked velvet beans and have been assisted by several students some of whom ate rather freely of them.

One of us ate about an ounce and a half of coarsely ground velvet beans which had been boiled in water about six hours and were then seasoned with salt, pepper and butter. Neither the taste nor the odor of the raw beans was disagreeable to us, but the taste of the cooked beans was very unpleasant even after the addition of a large amount of butter. We found it almost impossible to force ourselves to eat them.

No appreciable effect, aside from the taste, was noticed until about an hour after eating the beans. Gradually there appeared a feeling of fullness and heaviness in the stomach, headache, nausea, irritation and restlessness, but in our case

no vomiting or purging. The general effect might be summed up in the expression, "a horrible feeling that one does not wish to undergo the second time."

Along with this experiment we had a very disagreeable experience by simply remaining in the room in which about four pounds of coarsely ground beans were boiled for several hours in an open vessel. Very soon after boiling began it was noticed that some substance was given off, which produced a burning or smarting sensation in the eyes and also a pronounced headache, a feeling that the head would burst or split open in the region of the temples. This sensation was still more noticeable when five pounds of beans were cooked in an autoclave under a pressure of fifteen pounds and the pressure suddenly released.

Another one of us ate about an ounce and a half of velvet beans boiled, whole, for several hours. The results in this case were similar to those just related. A sleepless night was passed with great restlessness. Vomiting was voluntarily induced in order to gain relief, but the disagreeable effect lasted for some time, nevertheless.

Several students ate variable quantities of finely powdered velvet beans which had been cooked by boiling in water for one and a half hours and then seasoned with salt and butter. In two or three cases each student ate as much as seventy grams or about two and one-third ounces. One person soon complained of the unpalatability of the beans, stating that he could scarcely force himself to eat them and that he felt very much as if he might vomit. This student ate less than an ounce.

Of five students who ate of the beans, only one reported that vomiting was caused. In this case seventy grams of cooked finely ground beans were eaten about five o'clock P.M. Very little supper was eaten that evening as there was no desire to eat. No appreciable unpleasant effects were felt until about midnight, when the student awoke with a sensation of heat, attended with perspiration and a feeling of slight nausea followed by sudden vomiting.

Another student who ate seventy grams of beans at five o'clock P.M. ate no supper that evening as there was no feeling of hunger. This student found it difficult to eat the beans and reported that they caused headache and nausea which lasted eight or nine hours. He awoke about three o'clock in the morning unusually hot and wet with sweat.

From these results it will be seen that the velvet bean contains some substance not found in any legumes commonly used as food for man. We have identified in the velvet bean an amino acid which is a pyrocatechin derivative. This substance had previously been identified only in the pods of the Horse Bean (*Vicia faba*). Guggenheim found that two and a half grams of this amino acid when taken by mouth produced extreme nausea and that he was compelled to vomit three times within ten minutes. Hence we conclude that the disagreeable effects resulting from eating velvet beans are due in part at least to the presence of this amino acid.

However, our experience in cooking velvet beans has shown that some other disturbing substance is present, either as such or is developed during the process of cooking. This is a volatile substance the nature of which has not yet been determined, though there are indications that it is a sulphur compound.

ALABAMA POLYTECHNIC INSTITUTE,
DEPARTMENT OF RESEARCH CHEMISTRY.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

RUINOUS PRICE CUTTING IS NOT THE ONLY WAY TO MEET COMPETITION.

SIX DRUGGISTS TELL OF SUCCESSFUL PLANS THAT HAVE HELPED THEIR BUSINESSES TO PROSPER.

Druggist No. 1 sells the newest goods.—

"I am located in a small town 75 miles from New York and endeavor to get down to the city at least every two weeks. This gives me a line on new goods that I wouldn't hear about otherwise for several weeks. For instance, last fall, as a result of one of these trips, I was the first druggist in our town to have the new waterless warming bottles. I had sold over $150' worth at full prices before my 'cut price' competitor had them in stock."

Druggist No. 2 gives every salesman a hearing.—

"My store is out in the middle west, 250 miles from the nearest large city. I keep in touch with things through the trade papers and the advertising matter that comes to my desk, but I find that the salesmen who come in the store also have good ideas. All that they cost me is the time required to hear them, and I know how to get rid of a man if he is just wasting time. I find, however, that most houses won't put a man on the road unless he is capable of giving patrons or prospects some service. Last week a salesman gave me an idea for displaying toothbrushes which just about doubled my sales on this item, and at full prices."

Druggist No. 3 pushes large sizes.—

"Whenever we can do so tactfully we try to sell the larger sizes. This helps our volume sales and really is an economy for the customer. For instance, the dollar size of one item we sell contains nearly three times the amount of the fifty cent size."

Druggist No. 4 has free service which brings sales.—

"We have to sell stamps and, in one way, every stamp sale is a dead loss. On the other hand, we spend hundreds of dollars every year in advertising to attract people into our store. I figure that this accommodation sale of stamps is also a magnet which draws people into the store. To get a further profit out of our stamp sales I moved the drawer to a place directly behind the stationery display. Every person who comes in for stamps sees this display and this idea adds one or more extra stationery sales every day."

Druggist No. 5 gets out and sees what the other fellow is doing.—

"If I feel myself getting a little stale or if the store work begins to lose some of its zest for me, I get out—I let my assistants take charge for an afternoon, for a day, or longer, and that gives them some good experience. If I only have an afternoon, I walk around the business section of our town and see what the other merchants are doing. If there is more time I visit some of the nearby towns. I do not look

* Instructor of Merchandising, Wharton School of Finance and Commerce, University of Pennsylvania; Lecturer on Business Administration, Philadelphia College of Pharmacy and Science.

only at drug stores; I find that merchants in other lines use ideas that can be applied to my business. A jeweler's use of draperies in his window gave me an excellent idea for displaying our line of perfumes."

Druggist No. 6, keeps on good terms with the wholesalers and manufacturers.—"It isn't always as easy as it sounds to pay every bill when it is due. For me it has sometimes meant borrowing from the bank or going without something I wanted. Now, however, I am beginning to see the practical results of sticking to this policy. Wholesalers and manufacturers tell me I am what they call a 'preferred customer.' This means that when there is any shortage of merchandise I am apt to get my orders through first, because I pay most promptly. Last spring brought a striking demonstration of this. Our city was in the midst of a smallpox scare and vaccine was becoming scarcer and scarcer. I was able to keep a good supply on hand because, as one house put it, 'Why shouldn't we give you preference? We can sell right now all we can produce; why shouldn't we sell it to the people who pay us promptly?' Thus I made a lot of profitable sales that other druggists had to pass up, and, in addition, this added to my reputation for dependable service."

WHEN A QUICK TURNOVER MEANS A QUICK LOSS.

SOMETIMES THE FASTER YOU SELL YOUR GOODS THE FASTER YOU LOSE YOUR MONEY. THIS ARTICLE TELLS WHY.

Druggist Brown shook his head dubiously. His friend, Herbert Smith of the Newfound Soap Company, had just finished a 5-minute enthusiastic talk about his product and the gigantic newspaper advertising campaign which was appearing to acquaint the general public with it.

Its claims to merit were unquestioned. Druggist Brown knew that, but still he hesitated to place his order. Finally he said, " 'Newfound Soap' is all right, Smith, but I don't see how you expect me to make any money on it when we buy it for $8.00 a case and sell it for $10.00. That's only a 25 per cent mark-up."

"But think of the turnover," quickly answered Smith. "In a store doing the business yours does you can sell a case of 'Newfound Soap' a week. We have a distributing depot here in town so you won't need to order more than one case at a time."

Smith then took out his pencil and reached for the pad of expensive paper that Brown reserved for demonstrating fountain pens. He continued, "You buy 'Newfound Soap' for $8.00 and sell it for $10.00. There's a profit of $2.00 or 25 per cent on your investment. But, listen, how long did it take you to sell that case? One week. You made 25 per cent in one week. In a year therefore, you make 52 times 25 per cent or 1300 per cent on your investment of $8.00 in 'Newfound Soap.' "

Brown was impressed. His mind wandered to the dozens of half-filled bottles of old-fashioned compounds which had been in the store when he bought it 10 years before and were still there. He wondered how much money he would have made if he had been able to turn over this stock once a week during the past ten years. That was enough. He would stock this fast-selling soap, even if his mark-up was only 25 per cent. The fast turnover would bring in the profit, and a handsome one, as Smith's figures showed.

Fortunately for Brown, all his stock was not sold on this fast turnover, low margin theory. *Otherwise, in a few months Brown's fine store would have been the object of a sheriff's sale.*

Turn for a minute to Brown's profit and loss statement for the first 11 months of 1925. It shows:

		Per cent.
Sales	$44,000	100
Cost of goods	26,400	60
Expenses	13,200	30
Profit	4,400	10

His cost of doing business has averaged 30 per cent of his selling price. That is to say, on every dollar's worth of goods he has sold, 30 cents has gone to pay the salaries of his help, rent, light and heat, delivery and the dozen other expenses that he incurs in selling his merchandise. While some of these expenses are fixed, most of them vary with the amount of business done. For instance, more sales mean more sales-people, a larger wrapping and delivery force and eventually more floor space. This statement is borne out by the fact that the costs of doing business in the largest department stores show little percentage variation from those of much smaller stores.

Now consider this soap deal. Assume that Brown gets the full price, which in the case of a heavily advertised and highly competitive article like soap is not at all certain.

		Per cent.
Brown's sales of 1 case of Newfound soap will be	$10.00	100
The cost of these goods is	8.00	80
His expenses will be (the percentage shown by his profit and loss statement)	3.00	30
His loss on the deal is therefore	1.00	10

Moreover, this $8.00 investment is expected to turn over once a week. Thus in a year's time Brown's total loss is $52. Quite a difference from the glowing picture of profits previously outlined!

Here is the lesson in this story of miscalculated profits.

First, there are two elements of cost in every sale: (*a*) the cost of the merchandise sold; (*b*) the cost of making the sale (the expenses or overhead).

Second, if the selling price is not sufficient to pay both the cost of the goods and the cost of making the sale (the expenses or overhead) a loss is inevitable, and the faster the turnover the greater the loss.

The reader should not infer from this that rapid turnover in itself is undesirable. Quite the opposite. For example, a druggist makes 4 times as much on his investment in an article which nets him 1 cent and which turns over 12 times a year than he does on an article which pays a profit of 3 cents but which turns over only once a year. *However, in order for any profit at all to accrue the selling price must be sufficient to pay both the cost of the merchandise and the cost of selling it.*

A BUSINESS ARTICLE WORTH READING.

"The Case Against Comparative Prices." *The Nation's Business*, October 1925, page 60. Bernard G. Priestly tells why many of the country's largest department stores are eliminating all comparative prices from their advertisements.

SEASONABLE DISPLAYS FOR DECEMBER AND JANUARY.

Perfumes and Toilet Articles.	Atomizers and Syringes.
Brushes.	Thermometers.
Flavoring Extracts and Spices.	Chest Protectors.
Olive Oil.	Hot Water Bottles and Warming Pads.

ACTIVITIES OF W. J. M. GORDON.*

Historical Notes on the Early Manufacture and Use of Glycerin in the Middle West.

BY JOHN URI LLOYD.

Sixty years ago, September, 1864, the American Pharmaceutical Association held its meeting in Cincinnati.[1] That was the first meeting attended by the writer of this paper, who though but a lad, recalls most vividly incidents connected therewith. My employer, W. J. M. Gordon, took the most active part of any Cincinnati member and at that meeting was made *President* of the A. Ph. A.

With a respect approaching veneration the writer viewed the semi-official visit made by a party of the "celebrities" present to the Gordon establishment. Among them, conspicuous to memory, are Procter, Parrish, Ellis, Taylor of Philadelphia, Sharp and Caspari of Baltimore, Markoe of Boston, as well as others whose faces rise before me as recollection bridges the sixty-year chasm between that day and this.

Reference to the Proceedings of that year shows that the members present embraced many whose records stand as milestones in the progress of American Pharmacy. For example: John M. Maisch, Frederick Stearns, Enno Sander, H. N. Rittenhouse, P. W. Bedford, H. A. Elliott, may be mentioned as among many others well known, taking part on that occasion. This introduction brings us to the subject of our present paper, namely—Glycerin.

At that time glycerin was just coming into pharmaceutical and therapeutical service. The writer has particular reasons for remembering this material, because at that date his employer, Mr. Gordon, was absorbed in this "wonderful new menstruum," being the only manufacturer west of the Allegheny Mountains. He was the earliest Cincinnati investigator concerned in the applications of glycerin to medicine and its use in the arts, and naturally an enthusiast concerning the glycerin problem as a whole. His factory, located in Deer Creek, was at that date largely devoted to glycerin and the newly introduced glycerin products.

Let us first consider the name itself, pronounced so differently by different persons. It was varyingly accented as glycerīne′—glycerēne′—glīcerīne′—and occasionally glycerin, the preferred name as I remember it being glycerēne′, although glīcerēne′ was also a favorite, spelled with the final e.[2] This demonstrates

* Section on Historical Pharmacy, A. Ph. A., Des Moines meeting, 1925.

[1] Hall of the Catholic Institute of Cincinnati, Wednesday, September 21, 1864, 3 P.M.

[2] The use of superheated steam enabled Mr. Gordon to make his "Pure Concentrated Glycerine," which process, see the *Report of the British Association for the Advancement of Science*, had been introduced in England in 1855. Note the spelling of the word, *Report*, 1855, p. 75 of the *Abstracts*.

how the name of a chemical curiosity discovered by Scheele in 1779 (when preparing lead plaster from olive oil[1]—Thorpe) could be variedly pronounced nearly a hundred years thereafter.

Let us now turn to Mr. Gordon and the glycerin subject as introduced by him during the AMERICAN PHARMACEUTICAL ASSOCIATION meeting of 1864.

> Query No. 14: Glycerine, its mission (so to speak) in Pharmacy as a remedy, as an adjuvant and as a solvent.
>
> "Mr. W. J. M. Gordon read a report on this query and showed samples of various preparations made with glycerin instead of sugar, where sugar is ordered by the Pharmacopœia. This elicited considerable discussion, in which surprise was exhibited at the low price at which glycerin is produced, and the quality and mode of manufacture was alluded to. On motion the paper was referred to the Executive Committee for publication."

Turn now to the article in question, page 237, in which Mr. Gordon introduces the subject by stating: "Not having investigated it as thoroughly as desirable, I will present what I have accomplished in connection with much that is not new."

He refers to the sweet taste, to the fact that it is almost equal to cane sugar syrup without being liable to fermentation, "resembling oils but unlike oils, miscible with alcohol and water in any proportion; not volatile at ordinary temperatures and not becoming hard at the freezing point of mercury."

He states—"The high price heretofore, no doubt, has kept it from many uses to which it is now applied." Then he considers its "nutritive and alterative effect" its "soothing effect in coughs," and its "more important medicinal value as a vehicle for the preparation of a great variety of remedies for both internal and external use." He lauds it as a menstruum in the making of Syrup of Hypophosphites.[2] He commends it in the making of syrups, mentioning "ipecac, senega and especially syrups liable to fermentation." For chapped skin and hands he says "it has no equal." "For sore nipples, skin diseases, ulcers of various kinds, to prevent excessive suppuration and cleanse the secreting surfaces." He states "it is highly recommended in deep abscesses with diseased bone, combined with iodine which it dissolves," adding that "it is the favorite mode of applying iodine and its salts." He commends it in cerates and ointments which it preserves from rancidity, especially Goulard's cerate and for Kino preparations, the "glycerole of which does not gelatinize." Glycerole of starch (1 oz. glycerine to 70 grains of starch) he introduces as a substitute for lard or cerate. It will prevent moldiness and keep vegetable extracts soft, he states.

In the preparation of fluidextracts it will be found to supply the place of alcohol and sugar to much advantage, presenting fluidextracts of Jalap, Veratrum, Cinchona aromat and Iris versicolor as examples thereof. He states—"It dissolves the vegetable acids, most of the vegetable alkaloids, sulphuret of potassium, permanganate of potassa, sulphate of copper, zinc, iron and potassa, alkaline and some of the metallic chlorides."

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[1] "It was discovered in 1779 by Scheele who obtained it in the preparation of lead plaster by saponifying *lard* with lead oxide."—"Watts' Dictionary of Chemistry."

[2] A preparation just then conspicuous by reason of its being introduced by Dr. Churchill of England as a "specific for consumption."

Indeed scarcely any pharmaceutical preparation requires a menstruum but that, in the opinion of Mr. Gordon, would be improved by glycerin. Unquestionably this paper of Mr. Gordon and the specimens exhibited did much to make the illogical use of glycerin in plant preparations of the Pharmacopœia of 1870.[1]

In the arts and industries likewise, Mr. Gordon introduces or at least urges the use of glycerin. The writer of this remembers how the printers who had previously used molasses for their gelatin rollers displaced this by glycerin, one great advantage being that it did not attract flies which formerly had swarmed in the printing offices.

Scarcely an art, from tobacco and liquor manufacture to the lubricating of machinery but could, as shown by Mr. Gordon's paper, employ glycerin to advantage.

Turn now to the *Eclectic Medical Journal*, 1916, page 509, and note a contribution by this writer, giving the conspicuous uses and different qualities of glycerin as sold by Mr. Gordon in 1864, all of which have passed out of use excepting "Gordon's pure, odorless glycerine," now official as glycerin.[2]

In conclusion, the writer would state, he has made no effort to trace the original uses of glycerin as recorded by others, or to touch the subject outside of a few references. My aim is to record my personal experience with Mr. Gordon who was the pioneer in the glycerin industry in the Middle West, which may be demonstrated as follows:

Procter and Gamble, manufacturers of soap and candles, were established between Central Avenue and the Canal, a few squares from Mr. Gordon's pharmacy. As a worthless by-product an immense amount of the "sweet water" refuse in the making of candles was run into the adjacent canal, as the easiest method of its disposal. Mr. Gordon arranged to catch that "sweet water," freely given him without charge. In horse-drawn tanks it was carried to his factory in Deer Creek where it was refined. The sweet water cost him nothing. Glycerin sold for $1.25 per pound.

In this connection it may be recalled that Mr. Gordon protected his apparatus and process with the utmost care. His employees were all loyal and could not be induced to give the secrets of his factory to any one. Very indignant was Mr. Gordon when he learned that a newly risen competitor had begun the manufacture of glycerin, and that for weeks he had worked as a common laborer in Mr. Gordon's laboratory, his chief duty being the wheeling of ashes from the furnace as well as that of a general roustabout. Seemingly that opportunity was all-sufficient.

Of old it was recorded—"the fashion of this world passeth away." (1 Cor. 7:31.) The manufacturers of soap and candles gradually turned to the refining of glycerin as a part of their opportunity. Mr. Gordon then became dependent upon crude glycerin from abroad, chiefly from Germany. Competition was impossible. The result to Mr. Gordon was financial disaster.

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[1] Out of the 46 official fluidextracts in the Pharmacopœia of 1870, glycerin was a constituent of the menstruum of 33.

[2] The only glycerin I remember as a competitor of Gordon was Bower's glycerin made in Philadelphia. If I mistake not it had a reputation before Mr. Gordon began glycerin manufacture and was the standard glycerin of that date.

SOME OF THE DRUG CONDITIONS DURING THE WAR BETWEEN THE STATES, 1861–1865.*

BY JOSEPH JACOBS.

Amongst the scarcest articles in a drug store during the war period were paper, twine and corks. Some of the stores obtained old life preservers from abandoned river boats and got a supply, thus, of hand-cut stoppers. Various fabrics were pressed together for small stoppers, and for large bottles, demijohns and jugs, different sized corn-cobs commanded the same price as XXX corks do to-day. In the museums of New York, Washington and Chicago, can be seen some of the specimens of attempts to manufacture glass bottles in Louisiana, Alabama and South Carolina.

In the interior districts and small villages the country doctors returned to first principles and to the use of the plants of the fields and forests; and these agencies were about all they had to rely on, outside of whisky and a little quinine, the latter frequently at $100.00 an ounce.

Interviewing one of our old Confederate surgeons, he said:

"During the early part of the war I was placed in charge of a railroad hospital in a small town where it was difficult to obtain medicine at almost any cost, and as I had my little hospital crowded nearly all the time, both with employees of the road and wounded and sick soldiers, afflicted with various diseases and all kinds of wounds and injuries, and being also engaged in general practice, it naturally followed that my mind was severely taxed in order to supply remedies and substitutes to meet the demands of such varied practice. I perused my 'Dispensatory' and called into requisition an old 'Botanic Practice' that had been handed down as a relic of the past, but from which I confess to have received valuable aid and very many useful hints in regard to the medical virtues of our native plants. I give you the following facts from a record I kept of the patients treated, and the remedies I used, and the principal substances I resorted to.

"Of that large class of medicines, so useful in surgery and so much in demand in war times, called antiseptics, most of them, I may say, have been discovered and appropriated to surgical use since our war. In fact, I had but little else at my command except the cold-water dressing for wounds. From experiment I learned to improve on the plain old method, as I think, by employing a decoction of red-oak bark added to the water, which acted as a disinfectant, and by its stimulating and astringent properties promoted the healing process. I also used a weak solution of bicarbonate of soda, which I found beneficial in the suppurative stages. When emollients were indicated, I used slippery elm and wahoo root bark, and solution of common salt often helped. In case of great pain I employed poppy heads, nightshade and stramonium.

"I had a number of cases of intermittent fever. I would give strong boneset tea, warm, until free vomiting was produced, and as a substitute for quinine I used, during the intermissions, butterfly roots or pleurisy root tea, which would nearly always cut short the febrile stage.

"Remittent or bilious fevers were treated much the same way, except that I invariably gave good doses of mandrake tea in the beginning. White ash root or prickly ash root were often given in these fevers to advantage, using always the butterfly root tea in the febrile stage. Virginia snakeroot, yellow root, or Sampson's snakeroot acted nearly as well, but I preferred the other. If I could have obtained blue mass or calomel I would have begun treatment with a dose or two of that, but none were to be had.

"Mayapple root or peach-tree leaves made into a strong tea and drunk warm would act on

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* Parts of a paper presented to Section on Historical Pharmacy, Buffalo meeting, 1925. The introductory of the article deals with general conditions of the South during the period considered. At the outset of the struggle drugs were third in importance; tinctures were made from native drugs, "moonshine" whisky supplied much of the alcohol; Dr. Jacobs states as far as he was able to learn no tax was placed on whisky. Drugs were obtained, to some extent, by blockade runners, from Mexico, Cuba, etc.

the bowels as certainly as senna; but with children, where too much tea is not desirable, I often gave beef's feet oil, hog's feet oil, or even lard heated with syrup.

"In cases of pneumonia, pleurisy, catarrhal fevers, etc., I made local applications of mustard seed or leaves, stramonium leaves, hickory leaves, pepper, etc., warm, and gave alternately butterfly root and sanguinaria, and continued to slightly nauseate, from day to day (no need of anything else). The two last-named remedies took the place of Dover's powder, quinine and all other diaphoretics, febrifuges and arterial sedatives.

"Phytolacca or poke was another favorite remedy—the tincture, when alcohol or whisky could be obtained; otherwise, tea of root or berries, I used in all cases of chronic rheumatism or neuralgia, enlarged glands, scrofula, syphilis, and all cases requiring alteratives, often combined with American sarsaparilla root, sassafras, alder and prickly ash.

"Female complaints gave me some trouble, but I soon learned the use of black haw, squaw-weed, partridge berry, etc. I had been taught in the old textbooks that opiates in large doses would control some cases of threatened abortion, when the patient had not lost too much from hemorrhage. I found that the black haw root tea would absolutely stop this tendency, not only in cases where there was but little hemorrhage, but where large quantities had passed, and would relieve the most severe case of dysmenorrhœa, especially when combined with squaw-weed, partridge berry or red shank.

"In stomach and bowel diseases I found but little difficulty in obtaining plenty of substitutes for opiates, astringents and the like; in fact, I believe that an all-wise Providence has especially provided the best antidotes in creation on the hills and dales, and by the vales and streams of our own Southland. In ordinary looseness of bowels or diarrhœa I gave an infusion of raspberry leaves or whortleberry leaves (both of which act finely on the kidneys and bladder). Where there was nausea or sick stomach, a handful of peach-tree leaves steeped in water and drunk will settle it, or what is perhaps better, the kernels of two or three seeds cracked and cold water drunk off them. If stronger astringent is necessary, the inner bark or red oak, blackberry or dewberry root tea, or red shank root, are sure remedies.

"Agrimony tea, and, as a last resort, the nut-gall or ink-ball made into what, from its color, I called black wash (made by squeezing the juice out and adding a little copperas). This black wash is not only a splendid ink, but is a destroyer of syphilitic sores, warts, corns, ringworm, and old ulcers and excrescences of nearly every kind. Weakened properly, it is good in obstinate bowel diseases, and can be used as an injection in gonorrhea, gleet, etc. Silk weed root put in whisky and drunk, giving at the same time pills of rosin from the pine tree, with very small pieces of blue vitriol, will cure obstinate cases of gonorrhea, and is a substitute for copaiba, cubebs, etc.

"I raised lobelia from the seed, and found it to be a reliable emetic, useful in cough medicines, croup and asthma. I have relieved asthma with lobelia and by smoking stramonium leaves. We, of course, used turpentine as an adjunct in all cases where indicated, which is the case in very many diseases, and in many a positive curative agent.

"Onions and garlic were useful as poultices in nearly all glandular enlargements, as are also poke-root, celery, pepper, parsley, sage, thyme, rue and other garden products. Many of the latter were used for diseases of women and children.

"White sumac, red elm, prickly ash, and poke, will in connection with black wash cure recent cases of syphilis. It will also cure many cases of chronic rheumatism. Peach-tree leaves and Samson's snakeroot will cure most cases of incipient dyspepsia. Gargle made of sage and honey will cure most cases of sore throat, tonsillitis, etc.

"For infants, calamus, catnip and soot tea are better than soothing syrup with opiates."

Nearly every old practitioner in the South, to-day, is full of such reminiscences as the foregoing.

Notwithstanding the restrictions on inter-state commerce and the almost exclusive reliance on blockade runners for supplies, many druggists in these southern towns and cities displayed much ingenuity in the disposition of the stocks, bought at auction at the seaports.

The late Mr. H. Metcalf, of Montgomery, Ala., relates that he attended an auction sale at Mobile on one occasion, and, arriving late, found the cargo all sold

except cod liver oil and beeswax, which he succeeded in purchasing. His two barrels of cod liver oil and 600 lbs. of beeswax were immediately reshipped to Montgomery on the Alabama River. Filling every shape and size bottle to be found, and placing a judicious advertisement in the papers, he was enabled to sell the oil, but what to do with the beeswax was a puzzler. Discovering a set of candle-moulds and using cotton yarn as a wick, he ran the entire mass into candles and succeeded in selling the whole stock.

Nashville fell early in the action, and there was but little suffering there on account of failure to obtain medical supplies. One incident is related there showing the shrewdness of a druggist at Nashville. When it became known that all the manufacturing enterprises would be blown up on the evacuation of the town, a shrewd druggist went around and succeeded in buying all the window glass in town. Three days later the explosions, on the retreat of the Confederates, broke one-half the window glass in the city, and Mr. S. reaped a rich harvest in his corner in window glass.

Various small attempts were made to manufacture chemicals at Knoxville, Tenn., Greenville, S. C., Columbia, S. C., and Milledgeville and Macon, Georgia, but outside of producing a few gun-caps and nitre for making gunpowder and a few carboys of sulphuric acid and charging the torpedoes in Charleston harbour, very little was accomplished. Later on some small manufacturing was done at Richmond and Charlotte, but, owing to the want of machinery and proper apparatus, little was achieved. A blockade runner brought into Wilmington, N. C., a supply of apparatus for making sulphuric acid, which arrived only a few days before the city fell. Much might have been accomplished with this but for the fall of Wilmington, as the plant was said to be first-class.

The excessively high price of quinine made its handling a profitable employment. Almost every means known to human ingenuity was employed to smuggle it through the lines. Small packages were placed in letters, which the Adams Express Company would guarantee for the sum of $2.00 to deliver to the post-office authorities at some point in the Confederacy. Officers speculated in it, buying and selling until this created a scandal almost equal to that of speculating in cotton, and it was finally stopped by a strong proclamation.

A large contraband trade was carried on by an almost continuous line of house-boats floating on the Mississippi River. When opposite Memphis the goods were either sent in at night or into the interior of Arkansas, where trusty parties soon disposed of the stock. The great bulk of this trade was sent out by traders and speculators in Paducah, Ky., and Cairo, Ill., and their main points of operation were Memphis, Tenn., Helena, Ark., Napoleon, Ark., and Greenville, Miss. In regard to Napoleon, very few of this generation ever heard of the town nor can it be found on the maps of the present day; yet in war time Napoleon, Arkansas, was a town of nearly 3000 people, well built with brick business houses, and contained a large U. S. Marine Hospital, built of brick; and situated as it was on the Mississippi, at the mouth of the Arkansas River, it was at one time a rival of Memphis for trade. This village was entirely destroyed by flood in 1869 or 1870; the last vestige of the large Marine Hospital was carried into the Mississippi River in 1874, and to-day there is not a human habitation left to show where Napoleon once flourished.

In such conditions as these, it is not to be wondered at that every kind of makeshift and substitution had to be resorted to in the field, in the drug store, and upon the farms and in the household.***

The following will give an idea of the economy that was enjoined in the matter of supplying general and post hospitals, the amounts stated being quantities for one year for one thousand troops:

Acetic acid, 5 lbs., arsenic, 5 ozs.; muriatic acid, 8 lbs.; sulphuric acid, 8 lbs.; tartaric acid, 16 lbs.; sulphuric ether, 16 lbs.; alcohol, 192 pint bottles; ammonia, 5 lbs.; nitrate of silver, 8 ozs.; assafoetida, 32 ozs.; camphor, 16 lbs.; catechu, 5 lbs.; white wax, 16 lbs.; chloroform, 8 lbs.; copaiba, 40 lbs.; creosote, 16 ozs.; adhesive plaster, 40 yds.; extract belladonna, 16 ozs.; buchu, 8 lbs.; columba, 8 lbs.; gentian, 8 lbs.; glycyrrhiza, 48 lbs.; hyoscyamus 16 ozs.; rhubarb, 8 lbs.; sarsaparilla, 16 lbs.; senna, 8 lbs.; valerian, 64 ozs.; mercuric chloride, 5 ozs.; iodine, 16 ozs.; ammonia, 32 lbs.; carbonate magnesia, 5 lbs.; sulphate morphia, 16 drs.; myrrh, 5 lbs.; opium, 5 lbs.; ether, 5 lbs.; jalap, 32 ozs.; cantharides, 16 ozs.; aloes, 32 ozs.; sulphate quinine, 80 to 160 ozs.; sugar, 160 lbs.; strychnia, 8 drs.; digitalis, 32 ozs.; mercurial ointment, 8 lbs.

The same sparse quantities were applicable in hospital stores' regulation and in the matter of surgical instruments, books, bedding, furniture, dressings, etc., and on the blanks furnished was printed the following: "It is urged that medical officers make requisition for such medicines only in the following table as are deemed indispensable."

Dr. J. Julian Chisholm, professor of surgery in the Medical College of South Carolina, published in 1861 his "Manual of Military Surgery for the Use of the Surgeons in the Confederate Army." This book was widely used, and was a most valuable contribution to war surgery, containing, as it does, a most exhaustive collection of hints and instructions relative to the treatment of sick or wounded men in camp, on the field of battle and in the hospital. In his preface he says (in part), as follows:

"As our entire army is made up of volunteers from every walk of life, so we find the surgical staff of the army composed of physicians without surgical experience. Most of those who compose the staff were general practitioners, whose country circuit gave them but little surgery and seldom presented a gun-shot wound. Moreover, as our country had been enjoying an uninterrupted state of peace, the collecting of large bodies of men and retaining them in health, or the hygiene of armies, had been a study without object and therefore of little interest."

From my friend, the late J. F. B. Lillard, of New York, I learn the following names of some druggists who were in business in the South during those trying times; Benjamin Ward, of Mobile; H. Metcalf at Montgomery, Ala.; J. A. Lee, New Iberia, La.; N. O. Mior, Columbia, S. C.; Jno. Ingalls, Macon, Ga.; J. J. Schott,[1] Galveston, Texas; F. S. Duffy, Newbern, S. C.; G. W. Aymar, Charleston, S. C.; S. T. DeMoville and A. H. Roscoe, Nashville, Tenn.; Robert Carter, Columbus, Ga.; A. Solomons, Savannah, Ga.; C. W. & H. R. J. Long, of Athens, Ga.

To afford an idea of the prices ruling in Richmond, June 1863, I append the articles in some original invoices purchased by R. W. Powers from Kent, Paine & Co. Same are as follows:

Three boxes ext. logwood, 47 lbs. at $4.00 per lb.; 1 keg bicarb. soda, 112 lbs. at $2.75; 1 case brown windsor soap, $12.75 doz.; 1 bbl. camphor, 86 lbs. at $20.00 a lb.; 112 lbs. of blue galls at $4.00 a lb.; 100 lbs. tartaric acid, $2.25 per lb.; salt, 44c lb.; hops $2.50 lb.; 1 cask French brandy, $52.00 gallon; India ink, 75c bottle; 9 doz. assorted pencils, $4.00 doz.; phosphorus

[1] Still living and in business.—EDITOR.

$14.00 lb.; citric acid, $4.50 a lb.; oil peppermint, $16.50 a lb.; Epsom salt, $3.87½ a lb.; 6 bottles capsules, $6.50 each; 12 pewter syringes, $1.25 each; 2 boxes blue pills, $6.00 each; 1 bottle syrup of Ipecac, $10.00; 15 ozs. quinine, $22.25 oz.; 60 dr. morphine $28.00 dr.; blacking $1.40 per box, tallow candles, $2.37 lb.

The late H. B. Metcalf, of Montgomery, wrote in 1898 in part as follows:

"I find that all my old books and papers were destroyed in the fire of last July. We were able to secure some drugs and chemicals during the war by attending the blockade sales at Charleston and Mobile. We did not have to substitute to a great extent in putting up prescriptions—those of us who were fortunate enough to be supplied at the sales. We found great difficulty in securing vials and corks, and were compelled to use second-hand vials, and corks made from the tupelo tree answered very well. Prices were, of course, high, for instance, during the last year of the war all tinctures were sold at $1.00 an oz.; quinine, $25.00 per oz.; morphine, $10.00 per dr.; quinine pills $1.00 each, and other pills $5.00 a dozen. Prescriptions ranged usually from $5.00 to $15.00. Whisky sold at $150.00 a bottle. You must recollect that greenbacks were worth about twenty times our money, gold 100 times. I imported a great many goods through Evans' Sons, Liverpool, and regret exceedingly I now have none of the invoices."

It was quite an industry, I am told by an Atlanta lady, Mrs. Marcus A. Bell, for the country people to raise castor oil beans. The crushed beans were boiled and the oil skimmed off. She said that the grandmothers of those days revived the traditions of Colonial times. They made their own dyes and coloring matters from the roots and barks of native woods. Dogwood, sumac and the roots of pine trees were largely used, and indigo was cultivated in the gardens. Instead of paregoric, fennel seed tea was given to the babies. For rash they used red oak bark and alum. Goose grease and sorghum, or honey, was a standard remedy for croup, backed up with turpentine and brown sugar. Sassafras tea was given in the spring and fall as a blood medicine. Adults' colds were doctored with horsemint tea and tea from the roots of broom sedge. For eruptions and impure blood, spice-wood tea was given. Wine was made from the berries of the elder bush. For diarrhœa, roots of blackberry and blackberry cordial; and so, also, was a tea made from the leaves of the rose geranium. Mutton suet, sweet gum and the buds of the balm of Gilead was a standard salve for all cuts and sores. Balsam cucumber was widely used as a tonic, and was considered and used abundantly as a specific remedy in burns. Catnip, elecampane, and comfrey root and pennyroyal were in every good housewife's pantry, in which, also, was the indispensable string of red peppers, a bag of sage leaves and of balm. Calamus root for colic in babies was a common dose. The best known standard Georgia tonic was dogwood, poplar and wild-cherry barks, equal proportions chipped fine and put in whisky and taken wineglassful at meal times; it is still used in large quantities from "Yamacraw to Nickajack." In hemorrhages, black haw root was commonly used; all the mustard we had was raised in our gardens.

She learned from these experiences that barks were best gathered while the sap was running, and when gathered the outer and rougher portion should be shaved off and the bark cut thinly and placed in a good position in the shade to dry; that roots ought to be gathered after the leaves are dead in the fall, or better, before the sap rises; that seeds and flowers must be gathered only when fully ripe, and put in a nice dry place, and that medicinal plants to be secured in the greatest perfection should be obtained when in bloom and carefully dried in the shade.

I here append a list of substitutes that were used by druggists and physicians

during the war in large quantities, in most of the instances being the only medicines of the kind to be had:

Imported article.	Substitute.
Columbo, Quassia	Yellow Root.
Spanish Flies	Potato bugs. Powdered leaves of butternut.
Jalap	Wild jalap, Wild potato vine, Fever root.
Aloes	Wild jalap, Mulberry bark, Butternut, Dock, Wild potato vine, Amer. columbo.
Quinine and Peruvian Bark	Tulip tree bark, Dogwood, Cotton-seed tea, Chestnut root and bark, Chinquepin root and bark, Thoroughwort, Spanish oak bark, Knob grass, Willow bark.
Digitalis	Blood-root, Wild cherry, Pipsissewa, Bugle weed, Jasmine.
Conium	American hemlock.
Opium	American hemlock, Motherwort.
Sarsaparilla	Wild sarsaparilla, Soapwort, Yellow parilla, China briar, Queens's delight.
Chamomile	Dogwood.
Flaxseed	Watermelon seed.
Gum Arabic	Low mallows, apple, pear and quince gum. Balm, Watermelon seed.
Ergot	Cotton root.
Guaiacum	Box-wood, Poke, Prickly ash.
Ipecac	Wild jalap, Carolina hipps.
Mezereon	Prickly ash.
Kino and Catechu	Cranesbill.
Senna	Wild Senna.
Colocynth	Alum-root.
Tannin	Smooth sumac.
Olive Oil	Peanut oil, Beech-nut oil, Cotton-seed oil.
Laudanum	Hops, Motherwort.
Bougies	Slippery elm bark.
Corks	Black gum roots, Tupelo wood, Corncobs.
Allspice	Spice-bush.
Pink root	Cardinal flower.
Asafetida	Wild chamomile.
Calomel	Dandelion, Pleurisy root, Butterfly weed.
Belladonna and Hyoscyamus	Jamestown weed.
Valerian	Lady's Slipper.
Colchicum	Indian Poke.

From various physicians, my mother and other observing women who went through the struggle, and from old Confederate magazines and books and newspapers, I have gathered the following data in reference to peculiar and unusual uses of articles that are incident to our trade, that seemed to be of more or less general employment in the South by physicians, druggists and in the Confederate households.

Wood anemone was employed as a vesicatory in removing corns from the feet. Powdered may-apple mixed with resin was used as a caustic in treating horses, the farriers using it for escharotic purposes.

On the farms the juice of the pulp of the maypop seeds was made into a summer drink in place of lemonade. Powdered bloodroot, snuffed up the nose, made a powerful sternutatory and was applied as an escharotic to fungous flesh. Pond-lily poultice was extensively applied to ulcers. Button snakeroot, or globe flower, was used largely as an expectorant and diuretic. Toothache bark (*aralia spinosa*) was used to allay pain caused by carious teeth, and in South Carolina the negroes relied on it almost exclusively for rattlesnake bites. Side-saddle or flycatcher was used in the various forms of dyspepsia. Ink was made from the rind of the pomegranate fruit and from poke berries. Where during convalescence an astringent tonic was indicated, dogwood supplied the need. This, with the blackberry and gentians and pipsissewa as tonics and diuretics, and sweet gum, and sassafras for mucilaginous and aromatic properties, and wild jalap as a cathartic, supplied the surgeons in camp with easily procurable medicinal plants, which proved sufficient in many times of need.

The bark of the dogwood and swamp willow was mixed with tobacco for smoking. Watermelon juice was made into a syrup, and the rind into preserves. The seed of the watermelon and those of the gourd were used as a diuretic. Gourd rind was used as mould for buttons. The ladies of St. John's Parish, S. C. used prickly pear for hardening tallow in candle-making, one pound to four pounds of tallow taking the place of wax. The hand-leaved violet formed an emollient application. Red maple made an astringent wash.

Buckeye lotion was used for gangrenous ulcers, and by some for the toothache.

Among the substitutes for coffee, at home and in camp, the following were a part: Rye, parched okra seeds, cotton seeds, parched sweet corn hominy, parched sweet potatoes, peanuts.

Cotton seed decoction was used for inflammation in mucous passages. The roots of the cotton plant were employed in asthma, and by the negroes as an abortant. Soap was made from cotton-seed by treating them direct with lye.

Among the substitutes for tea were *Ceanothus Americanus*, known as red shank, or New Jersey tea, and holly leaves and blackberry and raspberry leaves and rose leaves.

The Amelia azedarach (China berry) furnished some valuable uses. The ripe berries were employed in making whisky; the bark of the root was used as an anthelmintic. The leaves were said to prevent "botts" in horses, and were used to pack with dried fruits to preserve them from ravages of insects. A soap was made from the berries, called "Poor Man's Soap."

The ox-eyed daisy was used in place of Persian insect powder and insecticide used as far back as 1857. In the country, fresh elderberry leaves were laid near the head of a bed-ridden person to keep away flies.

In the households and on the farms many interesting expedients were resorted to. The newspapers were full of directions about soap-making and for preparing and obtaining the materials. The *Richmond Dispatch* and *Wilmington Journal* published minute directions for making soda from seaweed and corn-cobs, and recipes for making soaps.

Blackberry and elderberry wines were used almost exclusively as a substitute for foreign wines. All the newspapers published recipes for making these wines, and there is scarcely a housewife in the South who does not know how to make them.

In the *Mobile Register* I find the following:

"To alleviate the suffering and perhaps save the lives of many of our soldiers, when sickness may be traced to the use of unwholesome water in limestone regions, blackberry cordial is recommended. The following is a good receipt: Bruise the berries and strain through a bag; to each quart of juice add half a pound of loaf sugar, a heaped teaspoonful of powdered cinnamon, the same of cloves, and a grated nutmeg; boil these twenty minutes, skimming well. When cool, add half pint of brandy for each quart, or add good whisky."

A decoction of the blackberry root and the rind of the pomegranate fruit boiled in milk was a common remedy in diarrhœa.

The roots and leaves of the cockleburr were considered serviceable in passive hemorrhages, diarrhœa, gonorrhœa, and as a deobstruent in obstructions of the spleen and diseases arising from torpid liver.

One or two ounces of a decoction of Indian physic root was given as one emetic,

the dose of the powdered root being thirty grains, persisted in until vomiting occurred.

Engravers found that the different woods were of hardness as follows: First, the wild currant or service tree and the apple and pear; next, the dogwood, redberry (*azalea nudiflora*), and *kalmia latifolia;* then the holly, when well dried; but of all, the boxwood was preferred.

The peach tree furnished a number of uses: The gum was used instead of gum arabic; a tea of the leaves given in whooping cough; the leaves used to season creams instead of vanilla; the leaves used in dyeing.

Beer was made from maize, the persimmon and the sweet locust.

Calycanthus (sweet shrub) was employed as an antispasmodic tonic in case of chronic agues, a strong decoction of the bark of the root or of the seed being given. It was noticed that the root was strongly camphorated.

As an antidote for poison oak the bruised leaves of the *Collinsonia canadensis* (stone root) were employed; as also the *Verbena urticifolia.*

Rhus glabra (smooth sumac) was used as a gargle for cleansing the mouth in putrid fevers; and a decoction of the root employed in gonorrhœa and gleet. A vinegar was made from the berries.

Beech-tree leaves, collected in the autumn in dry weather, were used for filling beds, the odor being grateful and they being very elastic.

Black oak was considered efficacious in leucorrhœa, amenorrhœa, chronic hysteria, diarrhœa, rheumatism, and asthma. The powder of the bark, mixed with lard, was a remedy in painful hemorrhoids, and used as a fomentation in prolapsus uteri and ani, and for deflections in these parts.

As substitutes for hemp the following were used: The sunflower stalk, *Asclepias syriaca; Urtica diœcia,* and *Yucca filamentosa* or bear grass. The juice of the skin of the blue fig made a red ink. Fig twigs were used as pipe stems. Rope was made of wahoo (*ulmus alata*), and used in baling cotton. Wax myrtle (*Myrica cerifera*) was employed in making candles, and as a basis for fine soap. The soap was obtained from the berries by boiling and skimming. Four pounds of the wax made forty pounds of the soap, with the other ingredients counted. Candles made by the addition of grease are of a green color.

In making gunpowder the lighter woods, such as willow, dogwood and alder charcoal were recommended. I append an advertisement taken from the Augusta, Ga., Chronicle of 1862:

"To Contractors—Willow wood wanted: 500 cords willow will be contracted for, to be delivered on the line of the canal at the government powder factory at Augusta, Ga., at the rate of not less than 100 cords a month, commencing 1st December next."***

The following was published concerning the sassafras tree:

"The sassafras wood stripped of its bark is very durable and strong, resists worms, etc. It forms an excellent post for gates. Bedsteads made of it are never infested with bugs. The pith of the young shoots and the leaves contain much mucilage and are used extensively in New Orleans to thicken pottage in making the celebrated 'gumbo' soup."

W. Gilmore Sims wrote a friend that "the persimmon beer made in Orangeburg Dist., S. C., by Hon. J. M. Felder, equalled the best sparkling 'Jersey champagne,' or a carbonated cider. The old Southern song ran: 'Christmas comes

but once a year, Eggnog and 'simmon beer.' " It was customary to mash the fruit, strain through a coarse sieve, knead with wheat bran, and bake in an oven. This persimmon bread could be put away for winter use in making beer when wanted.***

I enumerate a few more medicinal uses that were made of some of the products of our southern fields and forests by our physicians and housewives, and will close.

Phytolacca decandra, or poke, was largely used in diseases affecting the scalp, and in ulcers, eruptions, itch and hemmorhoids. Knot grass was considered a powerful astringent in diarrhœa and uterine hemorrhages. Water pepper, says a writer at Manchester, S. C., was used in his family in 1862 in dysentery, and every case was improved and cured. Mountain laurel was employed with claimed success in rheumatism, gout and glandular enlargements; black alder as wash in cutaneous troubles; holly leaves used as an emetic, and birdlime made from the middle bark. Love vine was used as a laxative tea; *Pinckneya pubens*, Georgia bark, as useful in intermittent fevers.

Woodbine or honeysuckle was given in asthma, and a decoction of the flowers administered to calm the pain of colic following childbirth. A decoction made by pouring boiling water over the leaves, flowers or berries of the elder bush was used as a wash for wounds to prevent injuries from flies. Sea myrtle was used in popular practice in South Carolina as a palliative and demulcent in consumption and coughs, a strong decoction being given several times a day. Rag-weed was used in whisky in place of quinine in Maryland; cat weed was employed in popular practices in diseases of chest and bowels; hound's tongue in domestic practice as a mucilaginous drink, and the roots made into a poultice in case of bruises, sprains, etc. Gravel root was given as an emetic; horse nettle was used as an aphrodisiac among the negroes; Virginian silk as a diuretic decoction in gonorrhœa. The buds and inside bark of the long-leaved pine and bits of pine steeped in gin were favorite domestic remedies in coughs and colds, and as a diuretic.

In designing this paper, I had hoped to make it more complete by using contributions from surgeons of the Confederate army and navy, and druggists engaged in business during the period, so far as they were living and from papers to be loaned me by them. Out of scores of letters addressed to living men of this character, I received but few replies. In obtaining some of the matter, railway trips had to be taken, and much of it was collected at considerate expense and labor. When it is remembered that the conditions that are suggested here lasted for a period of nearly four years, then the sufferings and the achievements and the heroism of seven millions of people are in a measure made manifest.

If I have succeeded in recalling by way of suggestion some facts that in the present may be of use, or in the future may be evolved into utility, I will have been rewarded for my outlay and my efforts.

SEEKING A DISTEMPER CURE.

Rhodes Farm, Middlesex County, England, is known for the research work carried on there, whereby it is hoped to cure distemper, or prevent it. The work was started in 1923 through the efforts of Sir Theodore Cook, editor of the *Field*. Contributions for carrying on the work have come from dog fanciers in all sections of the world.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

"PLUGGING" SCHOOLS.[1]

BY ZADA M. COOPER, UNIVERSITY OF IOWA.

(The members of the Association of Colleges of Pharmacy will remember Miss Zada M. Cooper's efficient work as chairman of the committee to investigate "cram" schools and her excellent report for this committee. In this issue Miss Cooper extends her remarks concerning these schools and I am sure you will all be interested in the contribution.—C. B. Jordan, Editor.)

Some years ago the writer was chairman of a special committee of the Association to investigate the "cram" schools of the country. It was interesting work and we secured considerable information but, doubtless, our information was far from comprehensive, because nearly all of it had to be obtained by mail. For the most part, the people operating these so-called schools were eager to tell about the wonderful things they were able to accomplish, because their inquirers were to them just more prospective students—gullible, ready to swallow any statement whole and call for more.

Lately I have wondered how these institutions are getting on since prerequisite laws have been enacted in more than half of our states. Judging from a few of them about which I have first-hand information the enrollment must be somewhat reduced, perhaps considerably. It is quite impossible to determine the number enrolling. One thing is certain, however, and that is that, if as many hundreds are attending them as there were a decade ago, the states that do not have prerequisite laws are literally a dumping ground for the output of these institutions. It is altogether probable that not so many are attending them, for some young people like to stay in their home state and so, when they really want to practice pharmacy there, and there is no short cut available, they will go to a real college. Their attitude towards their work may remain unchanged. We, who teach, know that we always have some students whose sole ambition is to "get registered." Such would go to the "plugging school" if the law recognized that sort of preparation. Barring that, they take the only alternative.

In view of this curiosity about "plugging" schools I recently undertook another long range survey. As yet I have made no attempt to get in touch with the institutions themselves though, if time permits, I may try to do that. I have simply tried to determine where these schools still exist. Most of my information has come from secretaries of State Boards and I wish to thank them in this public way for their kindness in responding to my request.

There are, I believe, few, if any, new "cram" schools. The present ones were operating ten years ago and their policies now are pretty much the same as they were then. In a few instances attempts have been made to appear more like real colleges. Courses have been outlined, on paper, and catalogs printed. Statements are being made that the institutions are meeting Association requirements but they are not applying for membership or even inquiring what is necessary to get in. It is just an advertising "stunt." Those in charge know too well

[1] Reprints can be secured free of charge from Prof. Zada M. Cooper, Iowa City, Iowa.

that the most casual inspection would show them up but this sort of advertising does get some students for them that they otherwise could not get. Every now and then Board secretaries tell me that they are asked by students at some of the worst of these places, if the work is recognized.

Digressing a moment, it is becoming very evident that recognition of Association standards by law is forcing a number of second-rate and third-rate schools to meet Association standards or quit. When a state passes a prerequisite law, immediately these second-rate schools hasten to inquire how to get into the Association. For the most part these have been two-year courses, possibly short years, given by schools with library facilities that are nil and laboratory equipment that is utterly inadequate and with faculties made up of men and women poorly prepared or giving most of their time and energy to some other enterprise.

To get back to "plugging" schools proper, fifty-two Board secretaries were asked if such institutions existed in their jurisdiction. Not all were heard from, only eighty-eight per cent to be exact. Twenty-six (including Hawaii and Alaska) reported none. Twenty states report a total of twenty-six such schools, this number including correspondence courses, tutors, and "plugging" schools proper. No doubt there are others. In fact, I know of a few in some of the states not heard from.

On the whole they seem to be on a more precarious footing than formerly. That fact and the attitude of examining boards toward them is evident from some of my letters. "Next year will wind it up (referring to the school) as, after 1926, no one can come before our Board unless a diploma from a Class 'A' pharmacy school is evident. Glad to say our state is free from 'plugging' course and short course schools."

These men are resolved to "make hay while the sun shines." When they are forced out of one state they move to the nearest one without a prerequisite requirement. One Board secretary writes as follows: "I am glad to be able to inform you that we have no short term schools of pharmacy but we frequently have applications for examination from students of schools of this character located in ..... At our examination last November we had about thirty applicants who were graduates (?) of ..... School of Pharmacy. It seems that Professor ....., who was formerly connected with ..... College of Pharmacy, is a migratory sort of bird, as some of his students told me that after 'polishing up' his classes for our examination and for the ..... examinations last fall he had gone to ..... to prepare a class for an examination in that state in the early part of this year." The Secretary of the second state referred to, says, "We have elimated the short term course. None have operated in our state since November 15, 1924." From the third state mentioned comes this statement: "There is a short course school in ..... operated by a man named ....., who formerly conducted such a school in ..... When the prerequisite law was passed there, he had to move; he came to ....." Surely no one can be blind to the fact that there is bound to be some migration from states with college prerequisite requirements to those without. If those states are satisfied with pharmacists of that caliber, those who believe otherwise perhaps should not be concerned though it isn't easy to be complacent about it, if one has any pride in his profession and thinks at all of the right of humanity to be served by competent people when health and perhaps life itself may be involved.

A most interesting circular about one of these schools was sent me by the Secretary of a Board in an eastern state. The director of it apparently is a sort of itinerant vendor of pharmaceutical knowledge. Besides the home office address, seven other addresses are given, all of them in large cities located in four states and only short distances apart. At 8:30 every Monday morning he is in one city, at 2:00 o'clock that afternoon in another city of the same state; Tuesday is spent at the home office, both morning and afternoon; Wednesday afternoon finds the gentleman in an adjoining state; Thursday morning at 9:30 he is in a third state, and at 3:00 the same day in the fourth one. On Friday he goes back to the second state in his itinerary, meeting a class at 8:00 A.M. in one city and another at 2:00 P.M. in the metropolis. The circular includes this statement: "We advise all drug clerks who plan taking the State Board examinations in September or October to enroll this week in our Special Summer Course in Pharmacy. This course will prepare you for the Registered Assistant or Registered Pharmacist examinations of those states that do not require candidates to be high school or college of pharmacy graduates. Some of them are Massachusetts, District of Columbia, New Hampshire, Vermont, Georgia, Delaware, California, etc. Call personally this week at any of our branches for further information. Rates $15.00 for one month; $40.00 for three months; $75.00 for six months. Commencing with September 1, 1925, the rates will be increased to $20.00 a month." If I mistake not, the man who operates this is the same one who conducted (and I believe still conducts) the famous, shall I say?—(infamous would be more appropriate) correspondence courses which gave advanced degrees, most any degree one wished if the price were paid. For instance "ten large lectures" would give one the degree of Doctor of Pharmacy, to which perhaps it might be necessary to add the name of the state where the degree was operative. But the advertising said, with great naiveté, or colossal sophistication, does not one say he is a Doctor of Divinity from Yale or Harvard or Oxford? An editorial writer aptly describes this state of affairs: "Phar. D. (P.P.) means by parcel post, which is the customary way for holders of the higher degrees to designate the origin of the degrees they claim when they happen to have been obtained by the 'ten large lessons.'" It would be ludicrous if it were not so fraught with the possiblity of tragic results.

Quite recently another far-reaching bad result of "plugging" schools came to my attention. A certain large city has one that operates two evenings each week, making no pretense of doing anything more than drill its students on questions and answers. Now it happens that the law in the state where this school is located provides for the registration of assistant pharmacists and also *local* registered pharmacists. For neither of these is it required to present college work. The local registration is good only in towns of less than 1500, but everybody knows there are many such and the people of those communities are entitled to the same sort of service as residents of larger places. Assistant pharmacists have the rights and privileges of pharmacists during the temporary absence of the registered men. It is reported that many are going to this "plugging" school and are succeeding in passing examinations for one or the other of these certificates. There their ambition ends. Many of these certificates are being issued each year. It seems a most indefensible practice from the standpoint of protection of the public to say

nothing about the competition with real pharmacists who have had college training. Doubtless, it helps to keep salaries down, for the man who can prepare for his work by spending a few evenings will work for less than those who graduate from reputable colleges.

I find occasionally a person who feels that these schools fill a real need in serving to review people who are eligible for Board examinations, because college training and experience requirements have been fulfilled. If that is true, it is a grave reflection on colleges and on examining boards. If these "plugging" places are needed for any such purpose there is something sadly lacking in the relations of Colleges and Boards. Secretary Christensen of the National Association of Boards of Pharmacy has said that 95 per cent of the applicants for registration should pass the examination the first time, and he is right. Colleges should know what is fundamental and Boards should know what constitutes fitness for license. If it is necessary for a college graduate to spend a month or two or three in drilling over questions and answers culled from hundreds of sets of Board questions, something is radically wrong. A student who has spent two or more years in a college of pharmacy and has had two or more years of experience in a drug store can do his own reviewing These "plugging" schools do not exist for such students. They may occasionally get such a one but to say that is their main purpose is mere subterfuge. The people operating them are doing so for the money there is in it. Those who attend them do not really care to know pharmacy—they are primarily concerned with getting the license that will permit them to practice.

OREGON PHARMACEUTICAL ASSOCIATION EDUCATIONAL FUND.

BY A. ZIEFLE.

(The following contribution from Dean Ziefle indicates that this support is not by word of mouth only, but is indicated in a very substantial way. I hope that other state associations will be moved to follow in the path marked out by the Oregon State Pharmaceutical Association. —C. B. JORDAN, *Editor*.)

Oregon druggists assembled in convention in the new Pharmacy Building of the Oregon State College and established an educational fund which has been incorporated as the Oregon State Pharmaceutical Association Educational Fund. The purposes are:

(1) To provide a loan fund for and to loan money to worthy students of the Oregon State College, School of Pharmacy.

(2) To equip, aid or assist in the establishment, growth and maintenance of a library for said school and to expend money therefor.

(3) To establish a research laboratory for the physicians and druggists of the State of Oregon.

(4) To provide scholarships for worthy students of said school.

(5) To expend its assets and income in any manner which in the opinion of the trustees may be beneficial to the advancement and improvement of the Oregon State College, School of Pharmacy.

The motive behind the establishment of the fund was that the druggists desired to show their appreciation to the State of Oregon for the new Pharmacy

Building and its equipment. As soon as the purposes of the fund had been explained there was an immediate spontaneous response. Subscriptions came in so fast that the secretary had difficulty in taking the names. On the floor of the convention within fifteen minutes there were 52 subscriptions, totaling $6500.00. The average subscription is for $100.00, payable in ten annual installments. John F. Allen of Corvallis, a sincere and ardent worker for the School of Pharmacy, subscribed $1000.00.

The Board of Trustees consists of five members—The President of the Oregon State Pharmaceutical Association, the executive secretary of the State Association, and the Dean of the School of Pharmacy are permanent members. The other two members are practical druggists and are elected at the annual meeting of the Association.

There is a splendid response from druggists throughout the state and the Board of Trustees anticipate that there will be $25,000.00 in the fund before the first of the year. Many wholesale firms have voluntarily sent in their subscriptions, as have the leading traveling men who have called on the drug trade of Oregon for a number of years.

PHARMACY IN CHINA.*

BY CHARLES O. LEE.

There are a number of colleges and universities in China, offering regular courses in medicine, law, engineering, agriculture and other branches of the arts and sciences. In none of these are regular courses in pharmacy being offered. There are, however, at least two schools which have offered some work in pharmacy. Both of these are connected with mission institutions. Both might become first-rate schools if funds and facilities could be provided for their maintenance, but they can't be ranked as such to-day.

About three years ago plans were made to open a school of pharmacy in one of our mission colleges in north Central China. For some reason the school failed to open and the plan has been given up. Those of us interested in the project still hope that some one of our colleges will soon make the start in offering college training in pharmacy. The matter has been brought to the attention of the authorities of one or two of our universities. These schools are generally hard pressed for funds. A new department would require more money, which in most cases is not available. The problem then resolves itself into a matter of funds, so far as these schools, that would be inclined to offer courses in pharmacy, are concerned.

It is quite certain that western pharmacy is in China to stay whether we do anything to improve it or not. Package goods of various kinds have found a market in remote China. Dispensaries of considerable size, with a pretty good line of pharmaceuticals, are found in many of the larger inland cities. They are generally run by men who have been apprentices in stores in cities like Shanghai and Tientsin. Some of these stores have prescription departments. As in almost everything else in China, the old is giving way to the new, none the less in pharmacy than in other things.

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* Section on Historical Pharmacy, A. PH. A., Des Moines meeting, 1925.

Perhaps the most urgent need for well-trained Chinese in pharmacy is in connection with our hospitals. Every Mission Hospital, that I know of, would like to have better dispensary service. Only a very few ever have had a foreign pharmacist in charge of the pharmacy work. First, because of the expense, and second, because of the lack of candidates for this service. In most of the hospitals the dispensing is done by a nurse who has been given special training in pharmacy. A man, so trained, can do the routine in dispensing and the hospital is able to get by on a minimum expense for the pharmacy service. All responsibility, of course, falls to the doctor in charge.

Some hospitals are beginning to ask for thoroughly reliable and responsible pharmacists for their dispensaries. Such pharmacists are not available. If they were—"would the hospitals be willing to pay for the services they would expect?" I have been told that they would. If so, some one should be training men and women in China for these positions.

It is not likely that persons of training below that of a full college course would be suitable for the position of full responsibility as pharmacist in one of our mission hospitals in China. Such a person would have to have a high educational rating, perhaps more so in China than in America. Such positions, then, should be filled by graduates with a regular baccalaureate degree in pharmacy. This would give the position a rating, in rank and salary, on a par with the position of graduates of other colleges. Without doubt such a course would attract the type of men we should like to have.

To establish such a school in some one of our universities in China would not require a great expenditure. These schools already offer good courses in the sciences, prerequisite to and allied with pharmacy. Courses in the pharmacy subjects could be offered with an added minimum in staff, equipment and materials.

As I see it, American pharmacy could not render a better service than to establish a good college of pharmacy in China, a country whose people look to America for help and whose youth beg for a chance to go to school.

A COURSE IN PHARMACEUTICAL LITERATURE

BY H. A. LANGENHAN

During the past year several inquiries were received relative to the use of pharmaceutical journals in teaching pharmacy. In response to these an outline of the course listed as Pharmacy 125–6–7 (current problems and pharmacy laws), was sent. The favorable acknowledgment and suggestion that this outline be published accounts for its appearance. Details are not given. They are left to the "imagination" of the instructor. Many conditions control the details of the work, *e. g.*, the number of students, the availability of the journals, the "ambition" of the instructor, etc. During the past three years the details as presented by the instructor and reports received fluctuated a great deal although the outline as a whole was adhered to. Inasmuch as the object of the course is to create an interest in journal literature and a desire on the part of the student to continue

utilizing journals after he leaves school, the details of the "modus operandi" for instilling this interest is of lesser importance.

The outline is given in several divisions, of unequal length. No attempt has been made to place it on the hour basis either for instructor's summary or student's report.

PHARMACY 125 (CURRENT PROBLEMS, ETC.).

1 Hour per Week, 1st Quarter, 12 Periods.

Class-room work consists of general outlines and survey by instructor or report by students on assignments.

General: (*Instructors' Reports*)

(1) Pharmaceutical journals.
- (*a*) History and development
- (*b*) Classification
  1. Type
     - *a*. Scientific
     - *b*. Commercial
  2. Source
     - *a*. Private ventures
     - *b*. Association organs
     - *c*. House organs
  3. Geographic
     - *a*. National and Foreign
     - *b*. Distribution in U. S.

(2) Supplements to Journals.
- (*a*) YEAR BOOKS (Am., Brit., Ger., etc.)
- (*b*) Directories, etc. (*e. g.*, "Era Directory," etc.)
- (*c*) Guide Books, etc. ("C. & D. Diary"—*Druggist & Chemist*—Mark. Rep. Guide Book—Red Book, etc.)

(3) Colleges of Pharmacy.
- (*a*) Historical development
- (*b*) Types
  1. Private
  2. State
- (*c*) Geographic Distribution

(4) Textbook in Pharmacy and Source.

(5) U. S. P. Revision Committees and Relation to Pharmacy Faculties.

(6) Source and Distribution of Pharmaceuticals, etc.
- (*a*) Manufacturer, large
- (*b*) Wholesaler
- (*c*) Manuf. of single article
- (*d*) Retailer

STUDENT ASSIGNMENTS.

Correlated with Instructors' Reports.

No. 1. Pharmaceutical Journals.

a. Select the latest issue of the journal assigned and report on the following:

1. Date of Vol. 1 and Number of present volume
2. Editor and place of publication (present)
3. Type of journal
4. Size of journal
5. Amount of advertising
6. Type of advertising
7. Amount of reading matter
8. Type of reading matter

9. Source (private, association or house organ)
10. Miscellaneous

No. 2.—Review journal assigned from viewpoint of market reports and price lists. Note whether only chemicals, pharmaceuticals, or sundries, etc., or a mixture, are listed. Estimate number of page devoted to reports and price lists.

No. 3. Oil, Paint and Drug Reporter—Drugs & Chemical Market.—Prepare a brief summary of the market conditions on assigned topic:

1. Drugs and chemicals
2. Botanical drugs (general)
3. Balsams
4. Barks
5. Beans
6. Berries
7. Flowers
8. Herbs and leaves
9. Roots
10. Seeds
11. Spices
12. Essential oils
13. Gums, etc.

No. 4. Prepare Card Index of All Pharmaceutical Journals Found in the Library.—Use following form:

Issued monthly.
Title—JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.
Editor—(1925), E. G. Eberle.
Published at—253 Bourse Bldg., Philadelphia, Pa. Issued monthly.
Type—Scientific Association Organ.
Advertising—20 pages.
Subscription—$5.00 per year including membership and YEAR BOOK, $4.00 to non-members
Size, 7″ x 10″, 450 pp.
Vol. in Library—Vol. 1 (1912) to Vol. 14 (1925), inclusive.
Precursor. Proceedings of AMERICAN PHARMACEUTICAL ASSOCIATION.
(See card index under Proceedings.)

No. 5. Colleges of Pharmacy.

a. Refer to assigned catalog and report names and degrees of the Dean and pharmacy college staff.
b. Prepare a list of chairmen of U. S. P. conventions and of revision committees since 1820.
c. Compile a list of textbooks used in pharmacy proper. Give author's name and title. Classify texts according to

1. General—ex. Caspari, "Treatise on Pharmacy"
2. Special—ex. Scoville, "The Art of Compounding"
3. Prescription writing and Latin
4. Materia Medica and Pharmacy

No. 6. Pharmaceuticals.

a. Report on the text material of the catalogue assigned. State number of sections or groups, *e. g.*, Flex., Tablets, etc., in each.
Note particularly the specialty sections.
b. Prepare a list of manufacturers of:

1. Biologicals
2. Chemicals
3. Pharmaceuticals
4. Glassware
5. Machinery
6. Labels, boxes, etc.

SECOND QUARTER (PH. 126, 12 PERIODS).

1. General Instructions on Method of Abstracting, Compiling Indices, etc.

Each student is assigned a journal (no specific year) and asked to report on and turn in a brief abstract, with composite index, on a special topic, reviewing one article only.

Subject No. 1. Pharmacy legislation
2. Compressed tablets
3. Hypochlorite solutions

4. Preparation of syrups
5. Iron preparations
6–10. New remedies.

As a final report each student is assigned a certain subject, *e. g.*, Syrup Ferrous Iodide, and asked to assemble all information, available in form of a topic, indicating references properly in footnotes and correlating the information assembled.

THIRD QUARTER (PH. 127, 12 PERIODS).

Laws Affecting Pharmacy.—A study of the statutes and rulings. Assignments are given for reports on articles appearing in recent journals on federal legislation or any state legislation. All assignments are reported verbally in class and discussed by all.

COMMENTS ON OUTLINE.

The "instructors' reports" need not be commented upon. A preliminary study of each subject will bring out more material than can be included within the time assigned to the course.

STUDENT ASSIGNMENTS.

No. 1. Each student brings his assigned copy to class and presents the report orally. The analysis of each journal offers some interesting contrast.

No. 2. Information is sought for sources of standard quotations and price lists.

No. 3. Whereas this assignment may be of no special value to the retailer because of the quotations as given, the general market surveys, the brokers' quotations and import reports, bring out discussions on the middleman's profit.

No. 4. This furnishes the student with a catalog of the volumes available in the library. In preparing the special topic towards the end of the course, year books, digests, etc., are used as an index for material. Reference to the card catalog enables the student to ascertain at once whether the original article is available. It also gives the student a record of journals should he care to subscribe after he enters the retail pharmacy.

No. 5. This acquaints the student in part with the writers of many of the articles abstracted during the second quarter's work. It may be of interest to know that last year one student reported that Professor Day was a Botanist, Explorer, Professor of Pharmacy, Author, and Dean of Purdue. Inasmuch as this includes five men discussed in class the result is not necessarily hopeless.

No. 6. An attempt is made to familiarize the student with the leading pharmaceutical houses, the scope of their products. Quotations, discount and quantity prices are discussed. Attention is called to major products of the house, such as biologicals, chemicals, galenicals.

During the second quarter the student is instructed in the method of abstracting, compiling and the more important, "easiest" method of finding the necessary articles. Year books and Digest are first used as an index. Then the compiled index of the PROCEEDINGS A. PH. A. as well as of the *American Journal of Pharmacy*, finally the annual index. As the general topic is the same, a report on twenty to thirty papers oftentimes covers many phases of that particular subject. The final report is begun as soon as the student has been instructed on abstracting. An official product is selected as the subject and in the general write-up, the pharmacopœial text of each revision in which the article appears is analyzed and included in proper sequence.

UNIVERSITY OF WASHINGTON,
COLLEGE OF PHARMACY,
SEATTLE

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

Article IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

BALTIMORE.

The first meeting of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION for 1925–1926 was held at the Hotel Emerson on Oct. 28, 1925, 8:15 P.M., Dr. Robert L. Swain presiding.

The able and interesting reports of the different members of the Baltimore Branch who had the privilege and pleasure of attending the Conventions of the A. PH. A. in Des Moines, Iowa, and the N. A. R. D. in Memphis, Tenn. were very much enjoyed. These reports were presented as follows:

E. F. Kelly, "General Sessions A. PH. A."

Chas. C. Neal, "The House of Delegates."

John C. Krantz, Jr., "The Scientific Section," and "The Section on Practical Pharmacy and Dispensing."

Robert L. Swain, "National Association of Boards of Pharmacy."

Chas. C. Plitt, "Laboratory Conferences of American Association of Colleges of Pharmacy," and "Plant Seminar at the University of Minnesota."

B. Olive Cole, "American Association of Colleges of Pharmacy."

Chas. L. Meyer, "N. A. R. D. Convention Proceedings."

One of the special features of the evening was the splendid address of Dr. E. L. Newcomb of Minneapolis, Minn., Chairman of the Publicity Committee of the A. PH. A., and Publicity Director for the Headquarters Building Campaign Committee, who was in Baltimore to address the students of the School of Pharmacy of the University of Maryland.

Dr. Newcomb mentioned the great progress made by his Committee in enlisting the support of pharmacists of this country in the million dollar campaign for the erection and endowment of the Headquarters Building, and called particular attention to the great service that can be rendered by the library and by the survey and research departments of such an institution; also the great benefit to be derived from the unified centralized organization of pharmacists that will likely result as the outcome of such endeavors. He also stated that he was requesting the Branches of the A. PH. A. to give at least ten minutes at each of their meetings to the discussion and reports concerning the progress of the Headquarters Building project, and asked for this coöperation from the Baltimore Branch.

Dr. Newcomb spoke of the evils attending the price cutting indulged in by some pharmacists, and the effort that is being made to present and support a bill in the next session of Congress for price maintenance. He further advocated that it was necessary in connection with this project of price maintenance to consider some means of evaluating the merit of articles offered, and suggested that this was a problem for the pharmacist and pharmaceutical organizations.

It was a pleasure to have Dr. and Mrs. Newcomb attend this meeting.

Following the plan inaugurated during 1924–1925 to arrange special music for the meetings of the Baltimore Branch, Mr. Frank J. Slama contributed to the enjoyment of the evening by rendering several piano slections.

B. OLIVE COLE, *Secretary-Treasurer.*

NOVEMBER MEETING.

The Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION met at the Hotel Emerson on November 24th, 1925; Dr. R. L. Swain presided.

Frank T. Stone of Washington, D. C., President of the National Association of Retail

Druggists, expected to be the guest of the Baltimore Branch and address the meeting, and invitations were also sent to members of the Baltimore Retail Druggists Association to be present and meet Dr. Stone. However, Dr. Stone was forced to send a telegram expressing his regrets, and stating that due to illness in his family, he was unable to attend the meeting.

The Baltimore Dairy Council presented lantern slides, showing "The Dairy Council in Action" and Miss Anna Mary Gillespie, one of their representatives, gave an interesting talk and demonstration concerning the value of the right selection of foods and proper attention to ventilation and cleanliness. For instance, she advocated the use of cream-kissed carrots as "nature's paint brush;" named the benefits obtained from "essence of oatmeal," as well as from six glasses of the "water of life" per day; reminded those present that the apple was a good softener of the skin, eradicating wrinkles, and that one should also consume the wrapper of the apple; that the use of onions gave a sparkle to the eye; that the cabbage, potato, etc., are useful cosmetics, as well as nourishing foods; and that the cows "vanishing cream" gave firmness to the weary bones and sustenance to the body.

E. F. Kelly spoke concerning the proposed additions and deletions in the forthcoming issue of the National Formulary. He called particular attention to the inclusion of ampuls and formulas for compressed tablets. He also pointed out greater coöperation between the associated professions, in that the Dentists and Veterinarians were interested in having articles they used included in the National Formulary.

R. E. L. Williamson spoke concerning the advantages of organizations such as the AMERICAN PHARMACEUTICAL ASSOCIATION and its Branches, the Baltimore Retail Druggists Association, and the Maryland Pharmaceutical Association; and observed that although sometimes the progress made by such organizations was discouragingly slow, they were nevertheless worthwhile.

Charles L. Meyer spoke of the splendid reception given the members of the Maryland Pharmaceutical Association who recently visited the pharmacies of Western Maryland in the interest of having 100% membership of pharmacists in the Maryland Pharmaceutical Association.

Dr. Swain, in reporting the progress of the Headquarters' Building Fund, referred to a recent letter from Dr. E. L. Newcomb, in which he reported large subscriptions from the students of Valaparaiso University, Purdue University, and Indianapolis College of Pharmacy; and stated that special campaigns were being conducted in North Dakota, New York City, Indiana and St. Louis.

The musical program, which was very elaborate and pleasing, included several violin solos by Nathan Snyder, Ph.G., School of Pharmacy, 1925; splendid vocal selections by Mrs. Mamie R. Rysanek Toula, and piano renditions by Mr. Frank J. Slama.

B. OLIVE COLE, *Secretary-Treasurer.*

CHICAGO.

The 153rd meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the School of Pharmacy Bldg., 701 S. Wood St., Chicago on November 6, 1925 at 8:00 P.M. In the absence of President Warren in Washington, D. C., Vice-President J. A. Hynes presided. A large audience was present. In introducing the speaker of the evening, Dr. Gladys Dick, Chairman Hynes stated that the work of Mrs. Dr. Dick and of her husband, Dr. George Dick, on the causation and cure of Scarlet Fever was work of the most fundamental kind and of first importance to mankind. The address by Mrs. Dick was splendidly delivered and in language not too highly technical so that it was much appreciated by the pharmaceutical audience.

She stated that their work had begun in 1923 and was based on many papers appearing on the subject of Scarlet Fever since 1902. She described the history of the several serums that had been offered as an alleviative or cure for Scarlet Fever since that year and presented the reasons for their failure as true curative agents.

The speaker stated that a hemolytic streptococcus grown in the throat of human beings had been isolated as the cause of Scarlet Fever and that it had been proven according to all the postulates of Koch. Furthermore they have been able to produce in boullion from this streptococcus a toxin, which injected into horses immunized them in apparently the same manner as Diphtheria toxin, similarly used. From the horse serum, the scarlet fever antitoxin is obtained. This antitoxin has been so purified that in one instance at least, 10 cc. of the product contained 300,000 skin test doses—20,000 skin test doses is considered to be a therapeutic dose

and should be contained in not more than 20 cc. of the antitoxic serum. The therapeutic value of the antitoxin is not quite so marked as some might expect, for several reasons; first, the death rate from scarlet fever is hardly more than 2 or 3 per cent; secondly, the antitoxin can hardly be introduced before the disease has reached the rash stage when it is too late to do much good in quickly curing the disease. It has been found, however, that the antitoxin is of great value in shortening the course of disease and reducing the danger of complications and sequelæ.

Very valuable results have been obtained, however, in the immunization work. Active immunization is accomplished by injecting small doses of the toxin and passive immunity by the use of antitoxin. The proper course of procedure in epidemic conditions, especially in institutions where children are found, is as follows: Apply the skin test to determine whether or not the individuals are immune to the disease. This requires 24 hours for observation. Plant on hemolytic agar, throat cultures from all who are not immune. Hemolytic streptococci will show after 24 hours of incubation. If the disease germs are not present in the throat, immunize by subcutaneous injection of scarlet fever toxin. If the germs are present in the throat immunize, passively, by injection of a prophylactic dose of Scarlet Fever antitoxin. This will confer immunity for 3 or 4 weeks. It is thought that active immunization will last in most cases for at least two years.

The author dwelt particularly upon the need for very careful standardization of both the Scarlet Fever toxin and antitoxin and the use of proper doses for the skin test, the active immunity, the passive immunity and therapeusis. She stated that a Scarlet Fever Committee somewhat similar to the Insulin Committee has been formed and that license to manufacture the scarlet fever biologic products was being granted only to those firms who would submit all of their product to the Committee for standardization. The hygienic laboratory at Washington has also established standards for these products.

Many took part in the discussion which followed and the pharmacists and others present were much interested regarding the marketing and use of this new and valuable remedy.

E. N. GATHERCOAL, *Secretary.*

DETROIT.

The November meeting of the Detroit Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Wayne County Medical Building on Friday, the 13th. An excellent chicken dinner preceded the meeting.

The meeting was called to order by President L. W. Rowe. The minutes of the previous meeting were read and approved. A suggestion not to hold a meeting in December was disapproved. Messrs. Seltzer and Webster advanced ideas whereby the December meeting could be made very interesting by having a Christmas tree and gifts for everybody in attendance.

President Rowe introduced as the speaker of the evening Ralph Gordon Sickels, of the advertising department of Parke, Davis & Company. The subject of his address was "Selling Mr. Straphanger." He outlined plans for successful advertising and distributed a number of advertising cards, carrying messages. The Holiday Season being near, he explained how the retailer could add to his daily sales by advertising the many articles suitable for Charistmas gifts in every drug store. "This advertising should be followed up" the speaker said, "the efforts would largely repay the advertisers."

A general discussion of the subject followed—Mr. Ingram said that the advertising copy was important; there were 250,000 words in the English language but only about 3000 were known to the majority of ad readers. Mr. Webster brought up the subject of coöperative advertising to combat the price cutting, chain-store advertising. Mr. Hall considered service the best advertising for all stores. Mr. Seltzer said individuality and personality were important advertising assets. Other valuable points were brought out. A large number of pharmacy students were present and Mr. Seltzer assured them of a welcome to all meetings of the Branch.

A rising vote of thanks was tendered Mr. Sickels.

BERNARD A. BIALK, *Secretary.*

NORTHERN OHIO.

A regular meeting of the Northern Branch of the A. PH. A. was held at the residence of Willard M. Fox, June 26, 1925.

The meeting was called to order by President Fox.

The minutes of the previous meeting were approved as read. It was moved, properly

seconded, and carried that the appointment of a delegate to the A. PH. A. meeting in Des Moines be left to the President and Secretary with power to act.

Treasurer Guenther reported $626.90 in the treasury. Report accepted.

Moved that the Secretary and the Chairman of the Program Committee have the sanction of the Branch to pay the expense of one out-of-town speaker who might be invited to address the Branch during the coming year. (Motion by Davy, seconded by Muhlhan, carried.)

The next order of business being the election of officers, Messrs. Muhlhan, Guenther and Zettelmeyer were appointed a nominating committee. This committee brought in the following recommendations:

For *President*,	Otto E. Muhlhan
For *Vice-President*,	Edward D. Davy
For *Secretary*,	Carl Winter
For *Treasurer*,	Harry F. Guenther

It was moved, seconded, and carried that nominations be closed, that the report of the committee be accepted, and that the Secretary cast a unanimous ballot for the officers named. This was done and the new officers were promptly inducted into their respective offices.

Secretary Winter moved, and it was duly seconded, and carried, that the retiring officers be commended and given a vote of thanks for faithful service. CARL WINTER, *Secretary.*

A regular meeting of the Northern Ohio Branch of the A. PH. A. was held at the Assembly Hall, Cedar Point, Ohio, July 23rd, 1925.

President Otto E. Muhlhan called the meeting to order.

The minutes of the previous meeting were approved as read.

The President announced a partial list of committee appointments as follows:

Committee on Membership: A. F. Conrad, *Chairman;* A. L. Flandermeyer; Jacob Lustig.

Committee on Professional Relations: Louis P. Miller, *Chairman;* H. E. Benfield; Carl E. Ullrich.

Committee on Science and Practice of Pharmacy: Eugene R. Selzer, *Chairman;* Thomas Pratt; Neil T. Chamberlin.

Committee on Education and Legislation: Edward Spease, *Chairman;* Henry Pollack; Carl Winter.

Committee on Entertainment: A. J. Ejbl, *Chairman;* Edward D. Davy; Alex. Steiner.

Prof. Edward Spease was appointed as delegate of the Branch of the Des Moines meeting of the A. PH. A.

Moved by A. L. Flandermeyer, seconded by Phil. Lehr, that Prof. Spease represent the Branch at the Memorial Services in memory of Lewis C. Hopp to be held by the Ohio State Pharmaceutical Association July 24th. Carried. CARL WINTER, *Secretary.*

NORTHWESTERN.

Program of the Joint Meeting of the Northwestern Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION and the Wulling Club, held in the Main Lecture Room of the College of Pharmacy of the University of Minnesota, beginning at 10:30 A.M., Thursday, November 12, 1925.

Messrs. A. J. Kline, of the Northwestern Branch, and Byron Farley of the Wulling Club, presided, and Charles V. Netz acted as Secretary of the joint meeting.

1. "Dr. Charles F. Chandler: His Influence on Higher Pharmaceutical Education," Frederick J. Wulling.
2. "Biological Standards of the New U. S. P. X," W. S. Wallace, of the Freshman Class.
3. Reading of a Paper on "Cod Liver Oil," J. Wagoner, of the Junior Class.
4. "A Woman's Pharmacy for Women," Miss Mary Kirby, of the Senior Class.
5. "Poison Gas in Warfare and in the Home," C. H. Rogers.
6. A Brief Practical Talk (on "Dispensing Difficulties"), H. C. Kruckeberg.
7. "Some Sense," C. H. Huhn.
8. "Apprentice to the Hospital Pharmacist," G. Bachman.
9. "Botanical Drugs," E. L. Newcomb.
10. "The Des Moines Meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION," C. V. Netz.

Miss Elizabeth Malerich, Mrs. Josie Wanous Stuart, and Robt. T. Wincott spoke informally after the regular program upon invitation of the Chairman.

UNIVERSITY OF WASHINGTON.

The October meeting of the University Branch, A. PH. A., was held in Bagley Hall, October 22, with President Bradshaw in the chair. The main topics for discussion were the honor medal given by the Branch and the program for the ensuing year. C. F. Whittlesey, asistant superintendent of Stewart and

Holmes, wholesale druggist of Seattle, was given the floor. He spoke to the members who are all students or graduates, on "Problems of the Student after graduation."

Mr. Whittlesey is a graduate in pharmacy and has been a clerk and proprietor, which with his wholesale experience placed him in a position to present an interesting practical talk. The general outline of his theme was as follows:

Qualifications of a clerk.

Service of clerk to employer and *vice versa.*

Entering business.

1. Location.
2. Stock.
3. Credit.
4. Service (accomodations etc.) to public and value of each.

Mr. Whittlesey's work brings him in contact with those wishing to engage in the drug business and is called upon to suggest "stock."

The relation between location and stock followed by the proportioning of the stock was presented in an able manner especially the ratio of fixtures to supplies. "Buy as little as possible at first and add to this as the demand arises." With 46,000 articles listed by the wholesaler, "shorts" can easily be obtained, avoiding the necessity of investing money in a larger assortment of articles. The speaker called particular attention to the fact that many failures were due to business incompetence. He illustrated the advantage of small purchases and quick "turnovers" against quantity purchases with discounts. The problems of computing profits, estimating "overhead," and invoicing were briefly discussed. A rising vote of thanks was given to the speaker at the close of the talk. Seventy-five were present. H. A. LANGENHAN, *Secy.*

SMITHSONIAN INSTITUTION SEEKS TO WIDEN ITS SCOPE.

Coming into the centenary of the year when James Smithson, an Englishman who never visited this country, willed his fortune of $550,000 in trust to the United States to found "at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men"—the Smithsonian Institution is working out an ambitious program. Quoting the *New York Times* and Charles D. Walcott, Secretary of the Institution—"The problems which the Smithsonian proposes to investigate are problems of a scientific promise, irrespective of present economic value. There are always plenty of agencies prepared to make investigations where material results seem immediate. There are the various scientific bureaus of the Departments of Agriculture and of Commerce, the research laboratories of great industrial corporations, the work of which must inevitably have a more or less direct economic bearing. But of agencies seeking to discover unknown facts, to create new knowledge for its own sake, there are all too few. Yet it is upon such facts that applied science rests. Work in pure research is like the concrete base for a big gun. The gun shells the enemy and gets the credit, but it could not be fired without the concrete base."

U. S. CIVIL SERVICE EXAMINATION FOR DRUGGIST.

The examination is to be held for druggist to fill a vacancy in the United States Penitentiary, Atlanta, Ga., at $1860 a year, and vacancies in positions requiring similar qualifications. Receipt of applications will close December 26.

Applicants must have been graduated from a two years' course in a recognized college of pharmacy; or they must submit evidence that they are duly licensed pharmacists, such license having been obtained as a result of a written examination before one of the State Boards of pharmacy; and, in addition, they must have had five years of subsequent experience in the compounding of prescriptions. For the present vacancy it is desired to secure eligibles who have had experience in the administration of general anesthetics.

Competitors will be rated on spelling; pharmaceutical and chemical arithmetic; essay or report writing; chemistry, pharmacy, and materia medica; and education, training, and experience.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or from the Secretary of the Fifth Civil Service District, Post Office, Atlanta, Ga.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1925–1926.

Office of the Secretary, Lombard & Greene Sts., Baltimore, Md.

LETTER NO. 2.

November 13, 1925.

To the Members of the Council:

Through an oversight, the pages of Council Letter No. 1 were not numbered. Will the members of the Council please number these pages 1 to 20.—This refers to mimeograph copies of Council members.—EDITOR.

8. Minutes of Council Meetings Approved: Motion No. 1 (see Letter No. 1, page 1054) has been carried.

9. The Charge for the Use of the Text of the National Formulary V by the United States Dispensatory: Motion No. 2 (see Council Letter No. 1, page 1054) has been carried.

10. An Appropriation for the Expenses of the Headquarters Building Campaign: Motion No. 3 (see Council Letter No. 1, page 1054) has been carried and $5000 is added to this budget item.

11. Election of Members: Motion No. 4 (see Council Letter No. 1, page 1054), Motion No. 5 (see Council Letter No. 1, page 20) and Motion No. 6 (see Council Letter No. 1, page 1055) have been carried. Applicants for membership numbered 1 to 24 inclusive, applicants for membership numbered H-1 to H-18 inclusive, and applicant for Life Membership Number L. M. 1 are therefore declared elected.

12. Nominations for Local Secretary: No additional nominations have been received by the Secretary (see Item, 5 Council Letter No. 1, page 1054).

13. The following letter has been received from Charles H. LaWall:

> "In connection with the motion to elect Ambrose Hunsberger Local Secretary of the A. PH. A. for the Philadelphia meeting, please enter a motion from me to the effect that the week of September 12 be selected as the meeting time, and the Bellevue-Stratford Hotel of Philadelphia be selected as the official headquarters."

(Motion 7.) It is moved by LaWall that Ambrose Hunsberger be elected Local Secretary of the A. Ph. A.

(Motion 8.) It is moved by LaWall that the week of September 12, 1926 be selected as the time and that the Bellevue-Stratford Hotel of Philadelphia be selected as the official headquarters for the 1926 meeting of the A. Ph. A.

14. National Formulary Agency: The following letter has been received from Robert P. Fischelis, Chairman of the Committee on Publications:

> "Will you kindly present the following statement and motion to the Council for action? The Committee on Publications, following instructions of the Council, has submitted requests for bids on the National Formulary Agency to various publishers and received bids from J. B. Lippincott Company, Philadelphia, Pa., Midland Publishing Co., Columbus, Ohio, and Chemical Catalog Co., New York City. Each bidder was asked to state the amount per copy he would turn over to the Association from the sale of the National Formulary and to specify the minimum amount to be spent for journal advertising in addition to other publicity, such as postal cards sent to pharmacists, etc. The first column gives the amount to be paid the A. PH. A. per copy in Buckram binding. The second column shows the minimum amount to be spent for advertising. The bids compare as follows:

Publisher.	Amt. to be paid A. PH. A. per copy (Buckram).	Minimum Amt. to be spent for advertising.
Midland Publishing Co.	$2.135	$3000
J. B. Lippincott Co.	2.35	3500
Chemical Catalog Co.	2.40	5000

Add bids on the interleaved flexible leather bound copy, as follows:

Midland Publishing Co.....	$6.00
J. B. Lippincott Co.....	4.75
Chemical Catalog Co.....	4.80

The Committee on Publications considered these bids carefully and investigated the reliability of the publishers and decided by a vote of 6 to 2 that the award of the agency be made to the Chemical Catalog Company.

Communications from Messrs. Day and Eberle point out the value of having a recognized publisher of pharmaceutical texts like Lippincott associated with the National Formulary and suggest the possibility that such a connection would outweight the slight financial advantage that would accrue the ASSOCIATION if the bid were awarded the Chemical Catalog Company. The sales of the National Formulary IV will probably reach 55,000 copies. As has already been pointed out if the sales of the N. F. V are only 50,000 and the chances are that they will be much more, the ASSOCIATION would be $2500 ahead by awarding the bid to the Chemical Catalog Company. This may seem like a small sum just now but when the Headquarters Building is built and the expenses of the ASSOCIATION mount, $2500.00 or more likely $3000.00 will be a very acceptable asset. The Chairman holds no brief for any distributor but would like to point out that if the prestige of the AMERICAN PHARMACEUTICAL ASSOCIATION and the legal demand for the National Formulary are not sufficient to sell the book, no commercial publisher can contribute very much to making it salable. We are not engaged in marketing a new publication with an uncertain field so that the function of the Council in this connection is not to select someone to popularize the volume but merely to arrange for a reputable agency which will yield the greatest financial profit to the ASSOCIATION.

In view of the vote of the Committee, I wish to move that the Publication Committee be authorized to enter into a contract with the Chemical Catalog Company for the agency to sell the National Formulary V on the basis of the bids submitted."

P.S. "Since the Publication Committee voted on the award of the contract, J. B. Lippincott Company of Philadelphia, Pa., notified the Chairman of the Publication Committee that the amount they expected to spend for advertising was $3500.00 in place of $2500.00. This accounts for the difference in the amounts stated in Bulletin 1 to the Publication Committee and the amount given in this letter. The letter from the Lippincott Company has been transmitted to the members of the Committee."

(*Motion 9.*) *It is moved by Fischelis that the Committee on Publication be authorized to enter into a contract with the Chemical Catalog Company for the agency to sell the National Formulary V on the basis of the bids submitted.*

15. Applicants for Membership: The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 25, Alexander Glickman, 523 East 5th Street, New York City; No. 26, Archer T. Davis, 1099 West Main St., Decatur, Ill.; No. 27, R. E. Dunn, Kraft Hotel Building, Decatur, Ill.; No. 28, Guillermo Garcia-Colin, 3a. Guerrero No. 74, Mexico, D. F., Mexico; No. 29, Fusao Kasai, Calle Donato Guerra 29, Santa Barbara, Chih, Mexico; No. 30, Clarence Andrew Neilson, 1629 Walnut St., Philadelphia, Pa.; No. 31, William Greenberg, 231 W. 9th St., Chester, Pa.; No. 32, Edward John Cadman, 1721 Canfield Road, Youngstown, Ohio; No. 33, Margaret Airston, 379 S. Reno St., Los Angeles, Cal.; No. 34, Mamie K. Fitzgerald, 4211 Denker Ave., Los Angeles, Cal.; No. 35, Arthur Lee Phelps, University of Southern California, Los Angeles, Calif.; No. 36, Kaneshige Kiyoshi, 525 E. First St., Los Angeles, Cal.; No. 37, Walter Fred Wargell, 3129 E. 102nd St., Cleveland, Ohio.

(*Motion 10.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

16. Applicants for Membership on Account of Contributions to Headquarters Building Fund: The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters' Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership in the ASSOCIATION and you are requested to vote on these applications which have been properly endorsed.

H-19, Francis A. Britt, 401 Fulton Ave., Evansville, Ind.; H-20, Kenneth T. Haff, 330 Spring St., New York City; H-21, Sewall Cutler, 14 Fulton St., Boston, Mass.; H-22, Fred. Newquist, Essex, Iowa; H-23, Wilfred Clarence Berntson, 423 Jenks St., St. Paul, Minn.; H-24, Herman A. Yates, 5859 S. Ashland Ave., Chicago, Ill.; H-25, David Brown, 1434 Penn St., Denver, Col.; H-26, Wm. Dale Timmons, 502 E. 42nd St., Baltimore, Md.; H-27, Thos. Engwall, 1234 Diversey Pkwy., Chicago, Ill.; H-28, Walter M. Lambert, Fort Smith, Ark.; H-29, Sam Posner, 1224 S. Spaulding Ave., Chicago, Ill.; H-30, Adolf H. Leeb, 2218 N. Narragansett Ave., Chicago, Ill.; H-31, Arthur Jerome Travis, 424 Belden Ave., Chicago, Ill.; H-32, Elmer Robert Case,

3457 W. 63rd St., Chicago, Ill.; H-33, Erwin H. Walker, 612 North Ave., Waukegan, Ill.; H-34, John Henry Blass, 408 N. Gay St., Baltimore, Md.; H-35, B. F. Dudley, 202 Brackett St., Portland, Maine; H-36, Frank Bengal Stromer, 4259 Wentworth Ave., Chicago, Ill.; H-37, George T. Hastings, 532 Washington St., New York, N. Y.; H-38, Ed. C. Schefer, 817 E. Broad St., Richmond, Va.; H-39, David Chas. Raggio, 4163 S. Halsted St., Chicago, Ill.; H-40, Harley Roscoe Alden, 4–6 Lisbon St., Lewiston, Me.; H-41, Preston Powel, Adair, Iowa; H-42, Julius F. Earnest, 1699 Broadway, Denver, Col.; H-43, Mrs. C. Herbert Packard, 5 Emerson Road, Winthrop, Mass.; H-44, Franz E. Loes, 440 Washington St., New York City.

(*Motion 11.*) *Vote on applications of contributors to the Headquarters' Building Fund for Membership in the American Pharmaceutical Association.*

E. F. KELLY
Secretary of the Council.

Offices of Secretary E. F. Kelly and Editor E. G. Eberle to be combined and located in Baltimore at 10 West Chase St.

LETTER NO. 3.

November 27, 1925.

To the Members of the Council:

17. *Offices of the American Pharmaceutical Association.* During the meeting of the Executive Committee of the Council held in Washington on February 13th, 1925, considerable time was given to the discussion of the selection of a "full-time" Secretary and to the location of this office and also to the collection and storage of the property of the AMERICAN PHARMACEUTICAL ASSOCIATION now scattered about the country in the way of those who have been kind enough to hold it. It was the general opinion that the offices of the Secretary and of the Editor of the JOURNAL should be combined, not only in the interest of economy, but also because of the very considerable amount of assistance which one could render the other by establishing this direct contact, considerable duplication of records could be avoided, and the necessary records could be simplified.

Since the Des Moines meeting, the Chairman of the Council and the Secretary-elect have given further consideration to these matters and in the meantime the Secretary of the Council has received the following letter from Secretary Day:

"For the past seven years, I have stored in the College of Pharmacy building the back numbers of the PROCEEDINGS and YEAR BOOKS of the ASSOCIATION, together with copies of the "Fifty Year Index," the "National Formulary," III edition, and the BULLETIN, as well as some of the early numbers of the JOURNAL. This material was formerly stored in the Lloyd Library in Cincinnati until it became necessary to find other quarters for it and it was sent to Chicago from Cincinnati in November 1918.

There were at that time 160 boxes of books, aggregating 42,900 pounds in weight. It cost the ASSOCIATION $75.00 for packing and cartage, $163.49 for freight charges to Chicago and $40.00 for cartage in Chicago.

I have disposed, by sale and otherwise, of a part of this stock, but there has been added to it the remainders of the YEAR BOOKS published each year since 1918, excepting Volumes 11 and 12, the remainders of which still remain at Easton.

Owing to the crowded condition of the School of Pharmacy, it is necessary to use the space now occupied for the storage of these volumes and since it will be important that the stored material is accessible to the new Secretary, I would make the recommendation that quarters be found in Baltimore where this stock may be stored and that the Council make an appropriation to cover the cost of transporting the stored material and of renting quarters in Baltimore for its storage.

I hope that such action can be taken in time for the transfer of this stock during the Christmas holidays when I would be able to personally supervise the boxing and shipping of the material.

I might add that along with the volumes above mentioned, is also considerable historic material which should ultimately find its way into the proposed museum to be a part of the headquarters building.

An inventory of the stock transferred from the Lloyd Library will be found in the JOURNAL OF THE A. PH. A., Volume 8, 1919, pages 232 and 233."

Dr. DuMez has also informed the Secretary of the Council that he has a mimeograph machine, certain records, unbound journals and reprints that it will be necessary for the ASSOCIATION to accept for storage.

By direction of Chairman Hilton, given early in November, a fairly thorough canvas

of the possibilities in Baltimore was made. The results of this canvas were communicated to Chairman Hilton, who thereupon invited E. G. Eberle, Editor of the JOURNAL and Dr. DuMez, Editor of the YEAR BOOK to meet with him and the Secretary in Baltimore for a conference on Friday, November 20th, at which time the various questions involved were discussed in detail and the most promising premises inspected.

As a result of this conference, the Chairman wishes to make the following report to the members of the Council:

"An office approximately 23′ x 23′ can be secured in the Long Building, a fire-proof office building located at 10 West Chase Street, Baltimore, Md., for $720 per year and that a storage room, approximately 23′ x 26′, can be secured in the same building for $300 per year, for occupancy on January 1st, 1926. This rental is the lowest and the location is the most satisfactory of any offered; the office rental being $1.34 per square foot and the storage rental about $.50 per square foot. The office is located on the first floor and is well lighted; the storage room is cemented, has four windows above ground and is dry and well heated. The lease that is offered carries the usual provisions, covers heat, light and janitor service, is for one year with the privilege of renewal for two years additional, and the insurance rate is approximately 16 cents or that applying to fireproof office buildings. The building is just across Chase Street from the building of Hynson, Westcott & Dunning, which is a decided advantage as it would bring the work of the Headquarters Building Campaign into close touch with the Association's office, and is within four blocks of the Union Station of the Pennsylvania Railroad and about the same distance from the Mount Royal Station of the Baltimore and Ohio Railroad

"This office and storage room provide adequate space for the work of the Editor and the Secretary, and for the storage of the property of the Association in the same building and available for use at any time.

"It would seem appropriate at this time for the A. PH. A. to record its sincere appreciation of the coöperation and assistance so freely extended by the Philadelphia Drug Exchange and by the School of Pharmacy of the University of Illinois in the use, without charge, of their accommodations."

(*Motion 12.*) It is moved by Hilton and seconded by DuMez that the offices of the Secretary of the ASSOCIATION and of the Editor of the JOURNAL be combined and located at 10 W. Chase Street, Baltimore, Md., after January 1, 1926.

(*Motion 13.*) It is moved by Hilton and seconded by DuMez that the Secretary of the Council and the Treasurer of the ASSOCIATION be authorized to enter into a contract of rental with the M. A. Long Co. of Baltimore, Md., for the office and storage space above described under the conditions mentioned.

(*Motion 14.*) It is moved by Hilton and seconded by DuMez that the Secretary of the Council be instructed to express to the Philadelphia Drug Exchange and to the School of Pharmacy of the University of Illinois the appreciation of the AMERICAN PHARMACEUTICAL ASSOCIATION for their generous assistance and hospitality. E. F. KELLY, *Secretary.*

LETTER NO. 4.

December 11, 1925.

To the Members of the Council:

18. Local Secretary. Motion No. 7 (see Council Letter No. 2 page 1144) has been carried and Mr. Ambrose Hunsberger is therefore declared elected Local Secretary.

19. Election of Members. Motion No. 10 (see Council Letter No. 2 page 1145) and Motion No. 11 (see Council Letter No. 2 page 24) have been carried. Applicants for membership numbered 25 to 37 inclusive, and applicants for membership numbered H-19 to H-44 inclusive, are therefore declared elected.

20. Selection of Auditors. Chairman Koch of the Committee on Finance advises that the Committee recommends the employment of W. A. Johnson & Co. to audit the books of the Treasurer.

(*Motion 15.*) *It is moved by Koch that W. A. Johnson & Co., Baltimore, Md., be employed to audit the books of the Treasurer.*

(*Motion 16.*) *It is moved by Kelly that a bond of $15,000.00 with the company now bonding Treasurer Kelly, be placed on Treasurer-Elect C. W. Holton, the same to date from January 1, 1926, it being understood that the bond in like amount now covering Treasurer Kelly be continued in force until the actual transfer of the office of treasurer from Baltimore to Newark.* The ASSOCIATION has authorized this transfer to be made on January 1, 1926; it will, however, require some time to have the ac-

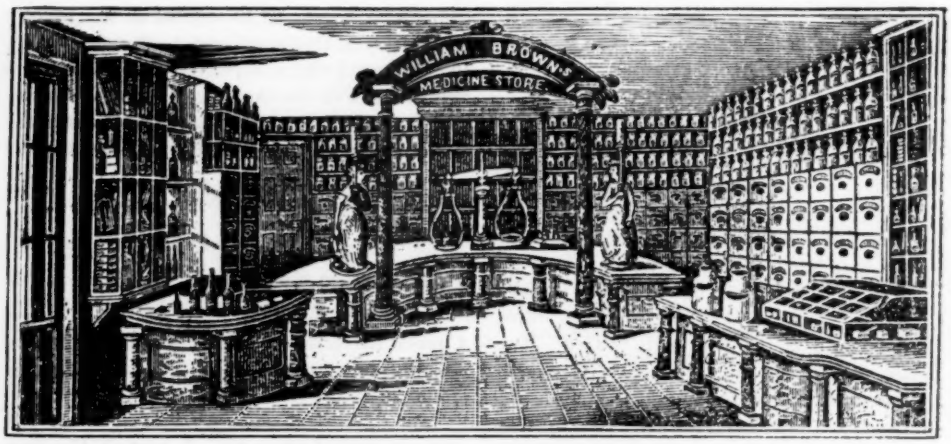
counts audited and the actual transfer completed.

21. Secretary's Bond. After January 1, 1926, the Secretary of the ASSOCIATION will collect the dues of the members and will handle receipts from the sale of the National Formulary and from the sale of badges, bars, etc. The By-Laws of the ASSOCIATION provide that the Secretary shall give bond for the proper care and disposition of the funds of the ASSOCIATION that may come into his hands, in such amount as may be prescribed by the Council.

(*Motion 17.*) *It is moved by DuMez that a bond of $5000.00 with the bonding company now bonding the Treasurer, be placed on Secretary-Elect E. F. Kelly, the same to date from January 1, 1926.*

22. Offices of the American Pharmaceutical Association. Motions No. 12, No. 13 and No. 14 (see Council Letter No. 3 page 1147) have been carried and the offices of the Secretary and of the Editor of the JOURNAL will be combined and located at 10 West Chase Street, Baltimore, Md., after January 1, 1926.

E. F. KELLY,
Secretary of the Council.



William Brown's Medicine Store.

FIFTIETH ANNIVERSARY OF BOSTON DRUGGISTS' ASSOCIATION.

The 50th anniversary of the Boston Druggists' Association was celebrated with a dinner at Young's Hotel on November 24. Arthur J. Bean, financial editor of the *Boston Post*, was the speaker of the evening. The program, menu, list of members, officers and committees were printed on a 4-page form, the first page of which was a reduced reproduction of the *Boston Herald* of November 24, 1875. A disturbing news item of the time related to the Canadian fisheries question. We are indebted to Ex-President John G. Godding for a report of the evening's celebration.

Many of the names of the members of 1875 are familiar to members of the A. PH. A.: Theodore Metcalf was the first President, and Prof. G. F. H. Markoe, one of the Ex-Presidents, was elected President of the A. PH. A. in 1875. Other names of the period are: Henry Canning, S. A. D. Sheppard, Thomas Doliber, Thomas J. Jenks, Joseph Burnett, and William Brown, whose Medicine Store is shown in the illustration—he was a member of the A. PH. A. until his demise in 1875. Mr. Burnett was one of the founders of the A. PH. A. He developed the manufacture of flavoring extracts. It was in Metcalf's Pharmacy that Mellin's Food had its origin. The two pharmacists stood high in their profession and were esteemed by their fellow-citizens. The *Boston Transcript* gave an account of the organization, also sketches of the organizers. The President, Secretary and Treasurer are, respectively, Harry C. Wiggin, Walter R. Dolliver and C. Herbert Packard, a Past-President of the A. PH. A.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* W. C. ANDERSON, *Vice-Chairman;* E. F. KELLY, *Secretary;* JAMES H. BEAL, CHARLES H. LAWALL, HENRY M. WHELPLEY, H. V. ARNY, A. G. DUMEZ, H. C. CHRISTENSEN, JULIUS A. KOCH, ROBERT P. FISCHELIS. *Ex-Officio;* L. L. WALTON, President; Vice-Presidents, W. C. ANDERSON, CLYDE L. EDDY; WILLIAM B. DAY,* Secretary; E. F. KELLY, Treasurer; WILLIAM D. JONES, Chairman of the House of Delegates. Editors of the JOURNAL and YEAR BOOK: E. G. EBERLE and A. G. DUMEZ. Committee on Publications: R. P. FISCHELIS, *Chairman;* H. V. ARNY, H. M. WHELPLEY, E. F. KELLY, WM. B. DAY, C. W. HOLTON,* A. G. DUMEZ, E. G. EBERLE.

Collaborators: The Members of the Council; the Editor of the YEAR BOOK, A. G. DUMEZ; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman, N. F. Revision Committee; the Chairmen of the Sections, A. PH. A.: F. F. BERG, J. G. BEARD, H. C. NEWTON, AMBROSE HUNSBERGER, L. K. DARBAKER; WILLIAM D. JONES, Chairman of the House of Delegates, A. PH. A.; Edward H. KRAUS, President, A. C. P. F.; CHARLES B. JORDAN, Chairman Executive Committee, A. C. P. F.; M. N. FORD, President, N. A. B. P.; HENRY C. CHRISTENSEN, Secretary, N. A. B. P.

EDITOR'S NOTE.

This Department of the December and January numbers of the JOURNAL will be abridged on account of the removal of the JOURNAL to 10 West Chase St., Baltimore.

PROGRESS OF THE A. PH. A. HEADQUARTERS.

Publicity Director E. L. Newcomb has continued his successful efforts in securing subscriptions to the Headquarters at various points. Everywhere his endeavors have been supported and the students at schools of pharmacy were among the enthusiastic subscribers.

The principal gains for November were $2010 in Illinois, $6135 in Indiana, $2801 in Maryland, $335 in North Dakota, and $5750 in Ohio; the total reported to date is not very far from $500,000.

The offices of Secretary E. F. Kelly and of the Editor of JOURNAL will be combined January 1. The connection this has with the headquarters is in the assembling of the offices of the ASSOCIATION at one location, and also to bring together the property of the ASSOCIATION, so that further provisions may be made for the library and museum. Very soon after the officials mentioned arrange their work, it will be possible to receive some of the donations for the museum held by prospective donors, and this also applies to books for the library. An idea of what is on hand can be gained from the Council Letters of this issue.

Interest in Industrial Museums is growing. A book, "The Industrial Museum" has just been published by Macmillan Company; the author is Charles Richards, who was for ten years director of the department of manual training at Teachers' College, Columbia University and for fifteen years director of Cooper Union, New York. He is now director of the American Association of Museums. He has directed various industrial education surveys since 1914, and has written an authoritative book on "Art in Industry."

In "The Industrial Museum" he describes the four great European industrial museums, in London, Paris, Munich, and Vienna; he makes a plea for the establishment of industrial museums in this country, and presents the principles essential to achieve the maximum educational value in such museums. His suggestions are explicit and practical; he discusses costs and methods fully.

We are hopeful that we will have some suggestions for the A. PH. A. Museum, to be established in the Headquarters.

Dr. Oskar von Miller, director and founder of the famous Industrial Museum of Munich, recently has been in New York at the invitation of the Association of the New York Museum of Peaceful Arts. The trustees of this association include Thomas A. Edison, Judge Elbert T. Gary, George F. Kunz, Calvin W. Rice and Felix M. Warburg. While in New York the Association of the New York Museum of Peaceful Arts consulted him on the plans and construction of the proposed industrial museum here.

These matters are mentioned because

* Assumes office January 1, 1926 and Secretary retires.

of the growing realization that museums serve an instructive educational purpose.

A CORRECTION.

The following is from Dr. Arthur D. Holmes, who addressed the Chicago Branch on October 16th:

"While reading the current issue of the JOURNAL,* I noted the report of my lecture before the Chicago branch. Unfortunately, this report contains a statement, 'While this assay calls for a standard of but 50 units, real good cod liver oil will assay at least 3000 units while a very poor oil will show 500 units,' that will give your readers an incorrect impression concerning the vitamin A content of medicinal cod liver oil.

"Apparently, the above noted vitamin values have been confused, for undoubtedly the reporter intended the sentence to read about as follows: 'While this assay calls for a standard of but 50 units, a real good cod liver oil will assay as high as 500 units, and an unusually vitamin-rich cod liver oil may show as high as 3000 units.'

"In order that your readers may not continue to be misled concerning the vitamin value of the cod liver oils at present on the market, would you be so kind as to include this correction in your next issue of the JOURNAL."

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Director Robert P. Fischelis has issued Bulletins C-51 to C-55, inclusive.

Bulletin C-51 relates to the election of Dr. H. V. Arny as *Chairman* of the National Conference on Pharmaceutical Research; J. H. Webster of Detroit, as *Vice-Chairman*, and J. C. Krantz Jr. of Baltimore, *Secretary-Treasurer*. A census of pharmaceutical research will be conducted by the Conference in 1926. Resolutions were adopted urging the construction of a general headquarters building in which drug research in colleges of pharmacy and the industries can be unified.

Bulletin C-52 reports the endorsement by the drug trade of General Lincoln C. Andrews in his effort to enforce prohibition. The bulletin is largely a report of actions taken at the recent Memphis N. A. R. D. meeting. Price maintenance measures are discussed.

Bulletin C-53 relates to a meeting of the Executive Committee of the N. A. R. D. and further discussion was had relative to carrying out resolutions supporting General Lincoln C. Andrews in his prohibition enforcement policy, and also to vitalize other resolutions sponsored by the Association.

Bulletin C-54 takes up further resolutions of the N. A. R. D., particularly the resolutions relating to ownership of pharmacies. It is brought out that some of the more recent drug stores have engaged in the drug business largely for filling prescriptions for alcoholics. Also, it is contended that this kind of business reflects on all other pharmacists to some extent, as the public is not fully acquainted with the situation.

Bulletin C-55 relates to the Second Brussels Conference, which is reported in the editorial pages of this issue of the JOURNAL.

* November JOURNAL, p. 1051.

OBITUARY.

JOSEPH AMILCAR LEGENDRE.

We are advised of the death of Joseph A. Legendre member of the AMERICAN PHARMACEUTICAL ASSOCIATION, by Marion Legendre, son of the deceased. Mr. Legendre died October 28, at his home in New Orleans, aged 60 years. He was born at Thibodeaux, La., February 18, 1866, and here he received his early education. In 1884 he came to New Orleans and engaged in Cusach's Drug Store and, later, in Cluverias' Pharmacy. He graduated from the Pharmacy Department of Tulane University in 1889, and soon thereafter engaged in business on his own account at Dauphine and Iberville Streets. In 1902 he bought the Finlay Drug Store in the Medical Building, and disposed of his other stores.

The deceased had been successful in the drug business and also in other activities. He took a deep interest in municipal affairs and the development of his home city. Mrs. Legendre and a son, Marion, survive the deceased. The latter is continuing the business. Members of the AMERICAN PHARMACEUTICAL ASSOCIATION who attended the New Orleans meeting will remember the deceased, for he took an active part in making the program a success.

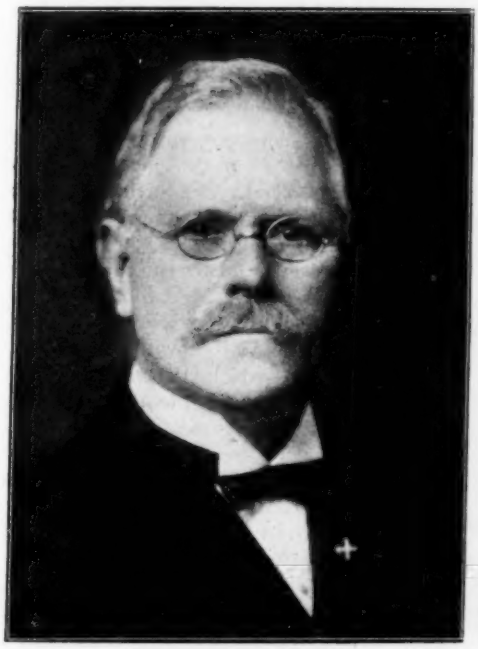
WILLIAM HULL WICKHAM.

William Hull Wickham, retired pharmacist and member of the AMERICAN PHARMACEUTI-

CAL ASSOCIATION since 1870, died at his home in New York City after a week's illness of pneumonia. Mr. Wickham was born in Brooklyn, January 19, 1846, a son of Joseph P. Wickham. He attended Brooklyn Polytechnic Institute, and was graduated from Princeton University in 1866. During the same year he entered the employ of McKesson & Robbins, and became a partner in the firm in 1870. A sketch of Mr. Wickham will be found on page 585 of the August number of the JOURNAL for 1922. He belonged to prominent clubs and societies, and was a member of the Chamber of Commerce of New York City, and a trustee of the Bowery Savings Bank. He is survived by a daughter, Miss F. Ethel Wickham.

FABIUS CHAPMAN GODBOLD.

Fabius C. Godbold, honorary President of the AMERICAN PHARMACEUTICAL ASSOCIATION



F. C. GODBOLD.

1915–1916, died at his home in New Orleans November 8, aged 83 years. He was born in Franklin County, Mississippi, July 7, 1842, and here he grew to manhood. During the war between the states he served for four years in the Confederate Army, and after the close engaged in the drug business in New Orleans in 1866, and continued actively therein in that city until 1913, when he retired. He was a graduate in pharmacy of the institution now known as Tulane University of Louisiana School of Pharmacy. He was one of the organizers of New Orleans College of Pharmacy.

Mr. Godbold joined the AMERICAN PHARMACEUTICAL ASSOCIATION in 1887, and since that time he and Mrs. Godbold attended the greater number of its annual meetings. He encouraged every movement that contributed to the advancement of pharmacy in the city of his adoption and state; it was largely through his efforts that the Louisiana pharmacy law was enacted and he was honored by appointment on the first state pharmacy board created by that enactment, serving as its Secretary for 21 years. He was a charter member of Louisiana Pharmaceutical Association, and a Past-President of that organization. When the National Association of Boards of Pharmacy was organized he at once took an active part in the work, and in 1906, at the meeting in Indianapolis, was chosen President. He was also active in the National Association of Retail Druggists.

Mr. Godbold's brother-in-law, Dr. H. V. Arny, expresses the regard in which the deceased was held by those who knew him when he communicated the information that his preceptor had passed away—"A more gentle, more kindly, more just man never lived," and then he states, in a personal way, his close attachment for the deceased.

The last meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION attended by Mr. and Mrs. Godbold was that held in Asheville. For the past several years he had been in failing health. The local and state pharmaceutical associations paid their respects to the memory of the departed, and this ASSOCIATION has lost in him a loyal, faithful member.

PERSONAL AND NEWS ITEMS.

Dr. William A. Pearson and **Prof. Joseph S. Hepburn** (the former is dean and both are members of the faculty of Hahnemann Medical College), have issued a treatise on physiological and clinical medicine. A review will appear in one of the succeeding issues of the JOURNAL. The book is dedicated to the memory of Mary E. English who endowed the John Clifford English Laboratories of Physics and Chemistry. According to Dr. Pearson the new Hahnemann

Hospital, in Philadelphia, is to be a 26-story structure with 1000 beds.

Quite a number of Book Reviews are to be published in succeeding issues of the JOURNAL.

Dr. John J. Abel, professor of pharmacology at Johns Hopkins Medical School, will receive the first award of the Research Corporation of New York. The former was organized in 1912 at the instigation of Dr. F. G. Gottrell, former director of the U. S. Bureau of Mines, who gave up his patents for the electric precipitation of particles in suspension to the Smithsonian Institution, so that the income could provide revenue for the encouragement of other discoveries.

Ambrose Hunsberger, Local Secretary for the 74th annual convention of the A. PH. A., was given a testimonial dinner at the 27th anniversary of the P. A. R. D., November 27. Among the speakers of the delightful occasion were: President L. L. Walton of the A. PH. A., Major Wm. G. Murdock, Dr. Edward James Catell, Dr. Arthur C. Morgan, President of the Philadelphia County Medical Society; Dr. Wilmer Krusen, Director of Bureau of Health; William H. Fisher, Jr., of the Philadelphia Chamber of Commerce; Geo. F. Lee, President of the Pennsylvania Pharmaceutical Association. President Frank T. Stone and Attorney Brockmeyer came from Washington and Secretary Samuel C. Henry and Julius H. Riemenschneider from Chicago to do honor to their confrère. Mrs. Nellie F. Lee added a word and Mrs. Hunsberger shared the honors of the evening. The introductory remarks were made by President Swain and Charles T. Pickett presided as toastmaster. Miss Mae Mackie and Otto Kraus, Jr. led the musical numbers. The program was well arranged and the capacity of the banquet hall was taxed by the large attendance.

Secretary **W. H. Lamont,** of the Missouri Pharmaceutical Association, reports that the local associations of St. Louis took a very active part in making "Pharmacy Week" a success.

Dean Willis G. Gregory and **Dean Wortley F. Rudd** discuss "Why a College of Pharmacy?" in the December *Druggists' Circular*. We also have two reprints of papers by the former, entitled "Food for Thought" and "A College of Pharmacy: Cultural or Technical?" The reprints are from the Tenth Anniversary Official Reference Book and Guide of Bronx County Pharmaceutical Association and from the Italian Pharmaceutical Association (New York) Official Year Book and Guide for 1925.

Clinical Medicine for November has as frontispieces an excellent reproduction of an oil painting of Dr. William Beaumont; it was in 1825 that the latter began his first series of the classical experiments on digestion.

The Midwestern Druggist is a new publication published by J. Will Kelley, formerly secretary of Kansas Pharmaceutical Association. *McPike's Bi-Monthly and Western Drug Record* has been discontinued. We wish the new publication success.

The Northwestern Druggist is sending the second edition of the Inventory Helper to its subscribers. It lists nearly 20,000 items, priced as of November 20.

The American Druggists' Fire Insurance Company is making preparations for its 20th Anniversary Meeting, May 1926. On October 1st the Company had in force insurance amounting to $56,131,135.03, according to the report made at the recent quarterly meeting of its executive committee.

CULLED FROM THE MESSAGE OF PRESIDENT COOLIDGE.

"The country does not appear to require radical departures from the policies already adopted so much as it needs a further extension of these policies and the improvement of details.....it is more in danger of being retarded by mistaken Government activity than it is from lack of legislation. We are by far the most likely to accomplish permanent good if we proceed with moderation.

"The functions which the Congress are to discharge are not those of local government, but of National Government. The greatest solicitude should be exercised to prevent any encroachment upon the rights of the states or their various political sub-divisions.

"Local self-government is one of our most precious possessions. It is the greatest contributing factor to the stability, strength, liberty and progress of the Nation. It ought not to be infringed by assault or undermined by purchase. It ought not to abdicate its power through weakness or resign its authority through favor.

"It does not at all follow that because abuses exist it is the concern of the Federal Government to attempt their reform.

"Society is in much more danger from encumbering the National Government beyond its wisdom to comprehend, or its ability to administer, than from leaving the local communities to bear their own burdens and remedy their own evils."

Young people, especially, prefer these smart dressings for their hair

STACOMB—and the new Liquid Stacomb—are especially popular among your younger customers. At this gay season of dances and parties, young people find Stacomb as much a requisite of the toilet as soap or talcum powder.

Stacomb is not only beneficial to the scalp, but remarkably effective. A small quantity, quickly and easily applied, will keep the hair in place all day.

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You can benefit most from this widespread Stacomb advertising by keeping this product prominently displayed. Colorful, smart window and counter display material will be sent to you on request. The Warner representative will gladly give you further information.

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Based upon recognized standards ot average weight of normal infants during the first year of life, babies who are fed upon modifications prepared from the directed quantities of Mellin's Food, whole cow's milk and water, as suggested for normal infants one month old to twelve, will receive daily for *each pound* of body weight the four essential elements of nutrition in the following average amounts:

1.75 Grams of Fat — **4.98 Grams of Carbohydrates**
2.01 Grams of Proteins — **.48 Grams of Salts**

This well-balanced nourishment also supplies fuel for the generation of bodily heat, as the stated amounts of fat, proteins and carbohydrates contribute 45 Calories for each pound of body weight. Mellin's Food modifications may therefore be depended upon to furnish necessary energy as well as food elements in proper proportion and amounts to meet the requirements for repair, growth and development of early life.

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Capacity 16 ounces
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The remedial value of a finished product often varies according to the skill exercised in milling the Crude Drug; exhaustion is always more rapid and complete when the milling has been skillfully done to a uniformity of size mesh.

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The nature of a Crude Drug determines the kind of mill in which it should be comminuted; without complete equipment, proper Drug Milling is impossible.

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THOUSANDS of physicians specify MERRELL'S Salicylates because they know them. Others, depending upon the integrity of the pharmacist, specify "true" or "natural".

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Benzyl Benzoate Gelatin Globules, 5 minims each	(25 in tube)	9.00
Benzyl Benzoate—Miscible, Solution	(2 fl. oz. bot.)	9.00
Benzyl Succinate Tablets, 5 grains each	(40 in tube)	9.00
Bulgara Tablets	(50 in tube)	9.00
Dentapher	(1 fl. oz. bottle)	9.00
Enteric Glycotauro Tablets	(72 in tube)	9.00
Flumerin—Sealed Tubes, 0.15 Gram	(12 in box)	21.00
Flumerin—Sealed Tubes, 0.20 Gram	(12 in box)	24.00
Flumerin—Sealed Tubes, 0.25 Gram	(12 in box)	27.00
Flumerin—Sealed Tubes, 0.30 Gram	(12 in box)	30.00
Glycotauro, Cascara and Phenolphthalein Tablets	(50 in tube)	9.00
Lutein Tablets, 5 grs.	(45 in tube)	22.50
Lutein Tablets, 2 grs.	(100 in tube)	22.50
Lutein—*Corpus Luteum*—Powder	(1 oz. in bot.)	42.00
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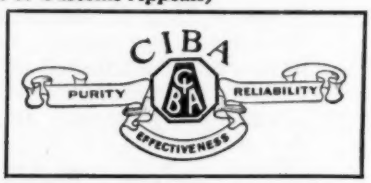

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